REVISION OF THE AUSTRALIAN GHOST MOTHS (LEPIDOPTERA HOMONEURA, FAMILY HEPIALIDAE)

PART III.[1]

By NORMAN B. TINDALE, B.Sc., South Australian Museum.

Fig. 1-129.

Elhamma Walker.

Elhamma Walker, List Lep. Ins. Brit. Mus., vii, 1856, p. 1561.
Perissectis Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1119.
Elhamma Kirby, Syn. Cat. Lep. Het., 1892, p. 887.
Perissectis Pfitzner and Gaede, Seitz Macrolepidoptera, x, 1933, p. 841.

Male with antennae stout, each segment expanded laterally and compressed longitudinally on one side (fig. 1). Labial palpi two-segmented, first as long as wide, densely clothed with slender hairs, second segment three times as long as wide, clothed apically with short, clubbed hairs (fig. 2). Maxillary palpi rudimentary, composed of a single small subspherical segment. Forewings with R_1 anastomosed with R_5 for a short distance before and after branching off of R_4, thus forming a small cell. Hindwings, in male, depart greatly from normal Hepialoid form; R_1 fused with R_5 to, or beyond forking of R_2 and R_3: only two M veins present. M_1 and M_2 fused (causing obsolescence of M_1), Cu_2 reduced; only one analis vein developed. In the female the venation of the hindwings is unlike that of the male, being practically identical with *Oxycanus* except for the absence of any trace of 2A.

Genotype: *Elhamma inconclusa* Walker, synonym of *Hepialus australasiae* Walker, nominated by Kirby, 1892.

Walker placed five species (*subvaria*, *inconclusa*, *signata*, *determinata*, and *antipoda*) in this genus. On a subsequent page of his "List" he removed one species, *subvaria*, to *Oxycanus*. Butler in 1874 placed *signata* in *Porina*. In

(1) Part I was published in Rec. S. Aust. Museum, iv, 1932, pp. 497-536, Fig. 1-64. Errata in part i are: In Fig. 26 showing venation of *Abantiades hyalinatus* the analis veins are wrongly marked. 1A should read Cu_2, 2A is 1A, and 3A is 2A. Part II *idem* v, 1933, pp. 13-43, Fig. 1-92. Errata in part ii are: p. 16, line 18, read "*rufobrunnea*" not "*rufobrunna*"; page 26, Fig. 36, read "male", not "female"; p. 39, the legends of Fig. 80 and 81 are transposed.

1889 Meyrick placed *determinata* in *Porina* and *inconclusa* in his new genus *Perissectis*, as a synonym of *australasiae* "Donovan". Meyrick did not nominate a genotype for *Elhamma;* Kirby in 1892 selected *inconclusa*. *Perissectis* is thus a direct synonym. The generic description in Seitz is applicable only to the female, the great difference present in the venation of the two sexes has doubtless led to confusion.

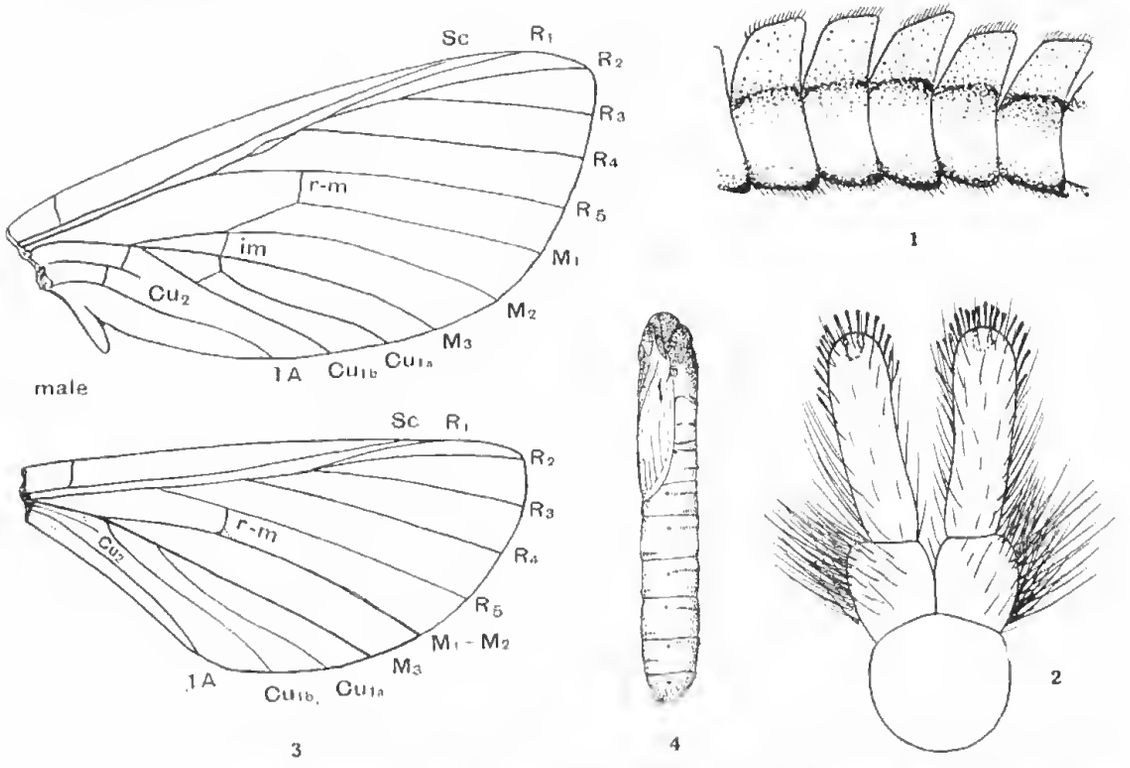


Fig. 1–4. *Elhamma australasiae* (Walker). 1, portion of male antenna; 2, labial palpi; 3, male venation; 4, pupa.

This is an endemic genus, containing only a single species, the distribution of which corresponds closely with the uniform rainfall areas in eastern and southern Australia where the rainfall exceeds fifty inches and the average annual temperature does not exceed 70°.

ELHAMMA AUSTRALASIAE (Walker).

Fig. 1-8.

Hepialus australasiae Walker, List Lep. Ins. Brit. Mus., vii. 1856, p. 1558 (female).

Elhamma inconcluso Walker, *l.c.* p. 1562 (male; in index name is corrected to *inconclusa*).

Perissectis australasiae Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1119.

Perissectis australasiae Pfitzner and Gaede, Seitz Macrolepidoptera x, 1933, p. 841, pl. 76e (female).

Porina banghaasi Pfitzner, Seitz Macrolepidoptera x, 1933, p. 841, pl. 78d (male).

♂ Head, antennae, and thorax brown, abdomen salmon-pink, at apex purplish-brown. Forewings brown with an angled diffused darker band from below

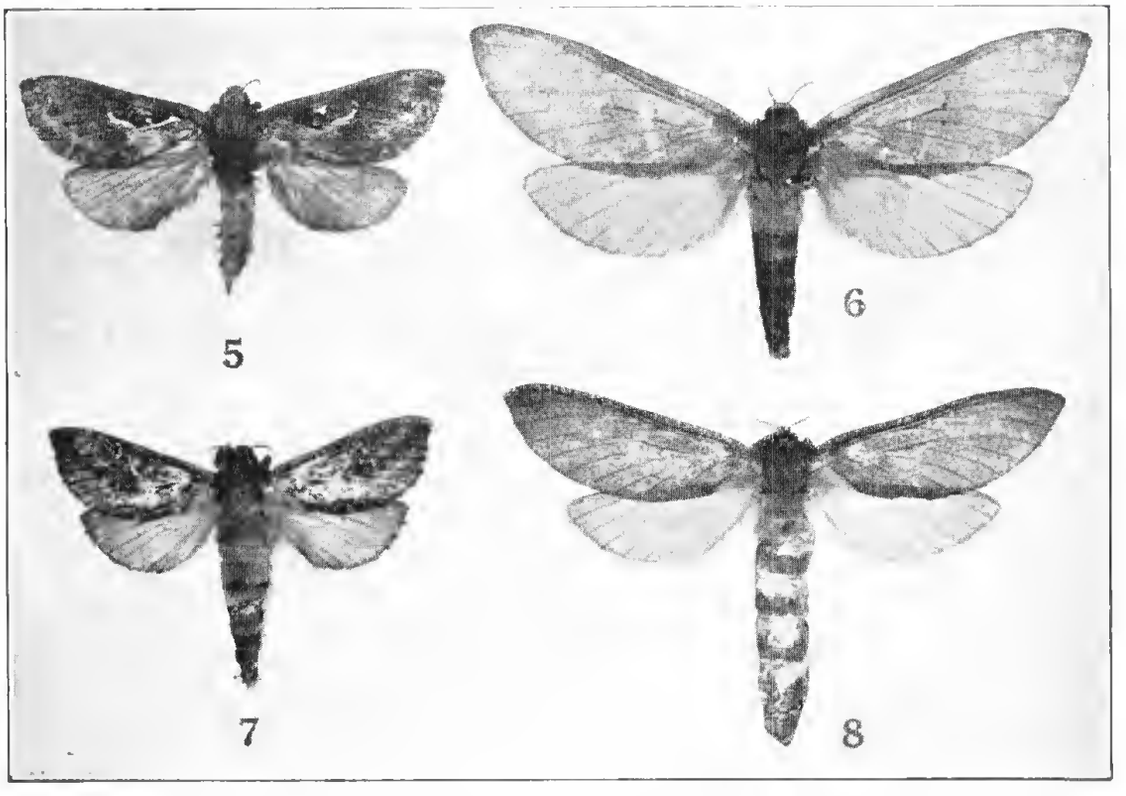


Fig. 5–8. *Elhamma australasiae* (Walker). 5, male, Sydney (type of *inconclusa* Walker, in British Museum Collection); 6, female, National Park, Sydney; 7, male, Moe; 8, female, Moe.

apex to M_1 near base, thence to base; a silvery-white streak follows r-m and extends to M_2, numerous darker scattered flecks, specially abundant near margins; hindwings salmon-pink. Expanse 42 mm.

♀ Head, antennae, and thorax brown, base of abdomen salmon-pink, otherwise purplish-brown. Forewings unicolorous brown with scattered minute flecks of dark brown; hindwings salmon-pink. Expanse 70 mm.

Loc. Queensland: National Park (3,000 ft.) 2, 3(2). New South Wales:

(2) Numbers after the locality indicate the months during which the moths have been taken on the wing.

Dorrigo; Blackheath (3,500 ft.); National Park 2; Rous 4; Pymble 2; Manly 2, 3, 4; Mosman 3; Stanwell Park 2; Killara 4; Hornsby 2, 3; Roseville 2, 3; Waverley 3; Richmond 3; Sydney 2, 3, 4; Lismore; Jervis Bay; Katoomba. Victoria: Moe 2; Caulfield 2; Melbourne; Narnargoon: Beaconsfield 2. Western Australia: King George Sound. 128 males, and 78 females have been examined.

Walker's type of *E. inconclusa*, a male in the British Museum collection, is figured (fig. 5). In this species the colour of the forewings may vary from a dark chocolate-brown through grey to an ochreous-red. The oblique white discoidal fasciate mark is a relatively constant feature. The females have the forewings almost free from markings, and as in the male the colour ranges from brownish-grey to ochreous-red and yellow. The hindwings in both sexes tend to be pinkish-tinged. Sydney is the type locality and the above description is drawn up from freshly-killed specimens.

In life the colours are very bright with a tinge of purple, but the hues are evanescent and fade rapidly after death. In March, 1927, this moth was observed in the National Park near Sydney. Numerous freshly-emerged examples of both sexes were clinging to wet sword-grass and to reed stems in swampy places, at dusk and after dark. The species is variable; all the forms may be taken together.

According to Mr. C. G. L. Gooding this species comes sparingly to lights at Moe, in company with *Abantiades hyalinatus*.

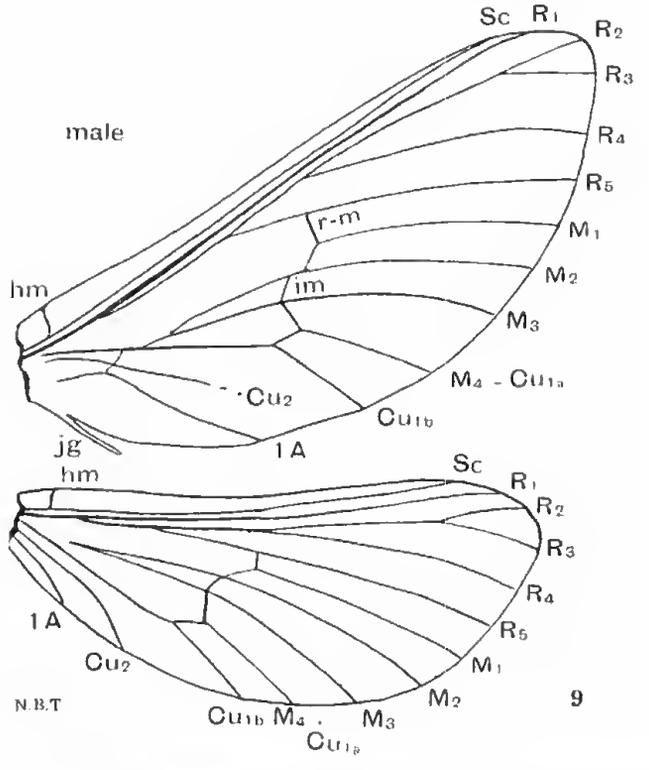
Examples from the Macpherson Range, in Queensland, are perhaps brighter in colour, but they cannot be maintained as a geographical race. The Western Australian record is based on a single faded female from the Australian Museum collection labelled "K.G.S.". With it were associated two males without data. These specimens are less well marked than usual, and have an ochreous appearance not common in Eastern examples. This may, however, be due in part to their state of preservation.

The pupa of this species (fig. 4) is 40 mm. in length and 6 mm. in diameter, pale brown with darker chestnut-brown chitinizations at the anterior extremity; when ready to emerge the colours of the adult are noticeable through the relatively thin epidermis. There are two dorsal and one ventral series of minute transverse serrations on each segment. The foodplant and the details of its life history are unknown, but the occurrence of the newly-emerged moths in swamps suggests that they may feed on the roots of swamp grasses or reeds.

Meyrick concluded that the *Pielus inearnus* of Walker belonged to this species, but the type, a female, clearly belongs to a species of the genus *Oxycanus*, and may be sought under the name *O. sordidus*.

JEANA gen. nov.

Antennae long, bipectinate, pectinations long, apex of each armed with three to five stout hairs; in female less developed. Labial palpi long and slender (fig. 10), three-segmented, basal segment longer than second, terminal one-half as long as second. Posterior legs only moderately hairy. Forewings with R_1 and R_2 separately from near base, R_3, R_4, and R_5 out of R_2; R_2 and R_3 branching much nearer to termen than to junction with R_4; R_5 from about two-fifths. Hindwings



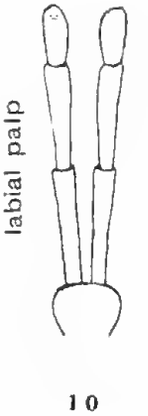


Fig. 9–10. *Jeana delicatula* gen. et sp. nov. 9, male venation; 10, male, labial palpi.

with R_2 and R_3 branching nearer to termen than to junction with R_4; anal area with 1A present as a short vein, visible only in cleared or bleached specimens, 2A absent (fig. 9).

Genotype: *Jeana delicatula* sp. nov.

The small size, different venation, in which the branching of R_2 and R_3 is near the termen, and the highly distinctive palpi serve to mark this genus off from *Oxycanus*, to which it is undoubtedly related. From *Fraus* it differs in the form of the wings, venation, and in the stouter body. It resembles *Elhamma* in that R_1 and R_2 are confluent near the base of the wing, but differs from that genus in the absence of the sexual dimorphism of the venation.

JEANA DELICATULA sp. nov.

Fig. 9-12.

♂ Antennae bright yellowish-brown; palpi smooth-haired, long, brown; head brown, thorax dark brown, abdomen dull brown, paler at base; legs long, slender, smooth-haired, dark brown. Forewings ochreous-brown, brighter along veins and margins of the wing; costa to one-half dark brown; over most of wing an obscure pattern of subrectangular dark brown and grey spots, the latter obscurely margined with pale yellow. Hindwings dull brown, at veins and along margin ochreous-brown. Expanse 42 mm.

♀ Antennae shortly bipectinate, shorter than in male, yellow; palpi yellowish-brown; head and thorax dark grey; abdomen pale fawn, base of abdomen and

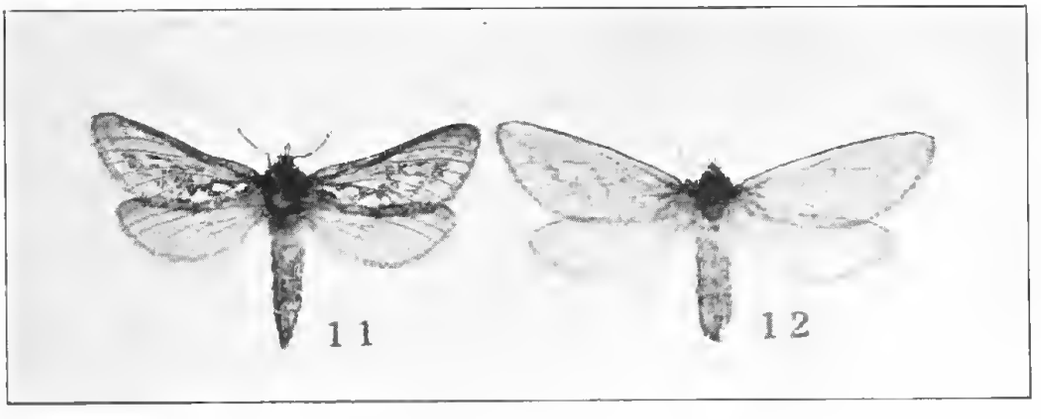


Fig. 11–12. *Jeana delicatula* gen. et sp. nov. 11, type, a male, Moe; 12, allotype female, Moe.

legs clothed with fine white hairs. Forewings subhyaline, sparsely scaled, grey, an obscure series of cream-margined dark grey marks from near apex to hind margin at one-half, also a marginal series from near apex to near base. Hindwings grey. Expanse 48 mm.

Loc. Victoria: Moe 4 (April 3, 1934, C. G. L. Gooding, type, a male and allotype female, April 17, 1934, I. 18849, in S. Aust. Mus.); Beaconsfield 4; Neerim. 6 males, 2 females.

This species is probably widely spread in Eastern Victoria, but owing to its relatively small size it escapes notice.

OXYCANUS Walker.

Porina Walker, List Lep. Ins. Brit. Mus., vii, 1856, p. 1572 (*nec* D'Orbigny, Mollusca, 1852).

Oxycanus Walker, *l.c.*, 1856, p. 1573.

Porina Meyrick, Proc. Linn. Soc. N.S. Wales iv (2), 1889, p. 1119; Trans. N. Zealand Inst., xxii, 1890, p. 206.

Oxycanus Kirby, Syn. Cat. Lep. Het., 1892, p. 892.

Porina Quail, Trans. Ent. Soc. Lond., 1900, pp. 411-432 (life histories).

Oxycanus Eyer, Ent. Soc. Amer. xvii, 1924, p. 305.

Antennae moderate, strongly bipectinate, or feebly bidentate; when strongly bipectinate there is sometimes also a pair of short dentations at the base of each

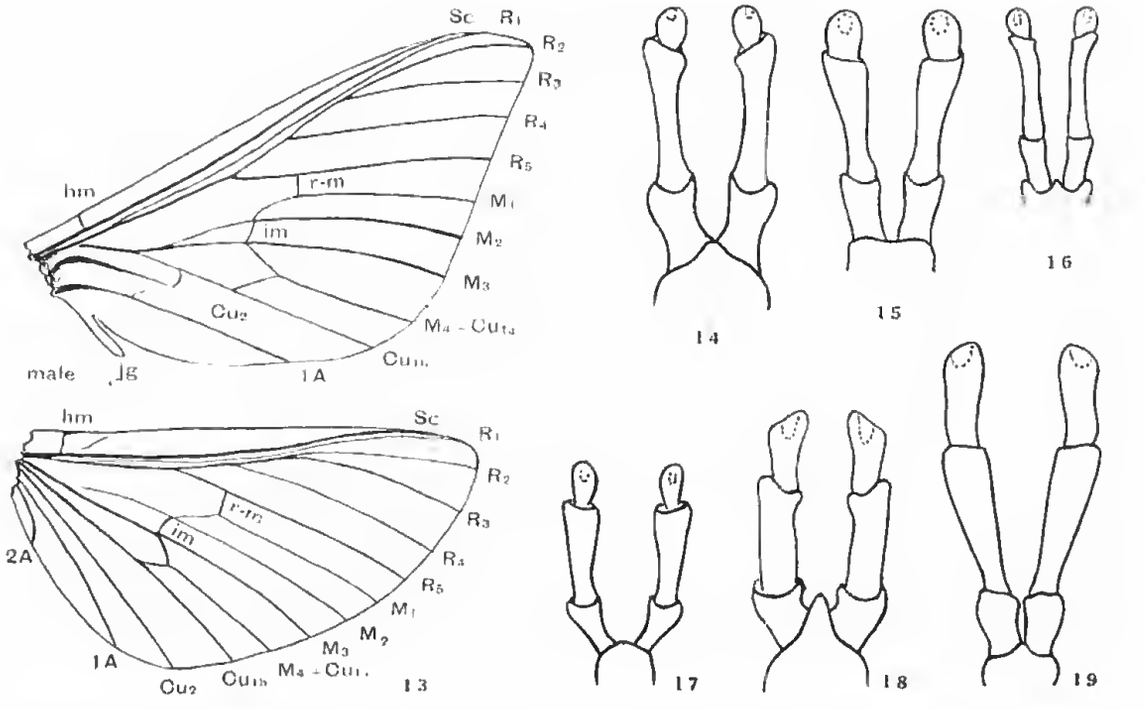


Fig. 13–19. 13, *Oxycanus australis* (Walker), male venation. 14–19. Labial palpi. 14, *O. rosaceus* sp. nov., Moe; 15, *O. stellatus* sp. nov., Cockatoo; 16, *O. occidentalis* sp. nov., W. Aust.; 17, *O. sirpus* sp. nov., Ferntree Gully; 18, *O. diremptus* (Walker), Healesville; 19, *O. determinatus* (Walker), Swan River.

segment, pectinations and dentations terminating in tufts of ciliae. Labial palpi moderate, porrected, with basal segment twice as long as wide, second at least three times as long as wide, apical one slightly swollen at apex, and nearly twice as long as wide, clothed with short flattened hairs. Maxillary palpi either present as a single rudimentary subspherical segment, or obsolete. Hind tibiae densely hairy. Forewings with R_1 and R_2 separately from near base, R_3, R_4, and R_5 out of R_2; R_2 and R_3 branching nearer to R_1 than to termen; R_5 from about two-fifths. Hindwings with R_2 and R_3 branching nearer to R_4 junction than to termen; 1A well developed; 2A present as a rudiment near base.

Genotype: *Oxycanus australis* Walker, 1856, nominated by Kirby, 1892.

This is the most extensively distributed of the Australasian genera, being found in all moist temperate and wet sub-tropical parts of Australia, in New Zealand, and at moderate elevations in the mountains of New Guinea. More than seventy species are now described, of which thirty-nine are Australian, and there are in addition others known of which the material is too scanty or poor to be described. By a strange error, Quail has attributed one South Australian species (*O. niphadias*) to Patagonia.

In Australian species of *Oxycanus* the *harpes* of the male genitalia are variously developed, but on the whole offer few characters suitable for specific notice. In *O. sordidus* they are much elongated, slightly incurved at the apex, and feebly clavate. In other species they are only moderately well developed.

The form of the tegumen (Buchanan-White, 1878) ([3]) is of special systematic importance. In *Oxycanus* this structure consists of two lateral chitinized members with dorsal membraneous connections, developed from the highly modified ninth tergite as a hood for the anus and genitalia. The inferior (strictly caudal) margins of this hood are strongly chitinized and are frequently armed with hooks, processes, lobes, and single or seriate spines. This armature is readily made visible in the moth, without dissection, by gently brushing away some of the subapical hairs from the ventral surface of the abdomen. Inspection of the tegumen facilitates the determination of members of an otherwise difficult genus. For detailed work dissections of the genitalia have been prepared and mounted in choral hydrate within a cell. To assist in a ready examination, the accompanying drawings were made of the margin of the left latus of the tegumen as though they were viewed from the right postero-lateral aspect, with the moth held ventral surface upwards: the caudal margin is, in consequence, upwards and the posterior (strictly dorsal or postero-dorsal) extremity is to the right, and the anterior (strictly ventral or antero-ventral) end to the left. The anteriorly projecting portion of the tegumen constitutes the *suspensorium* of Eyer.

Several members of the genus *Oxycanus* are of considerable economic importance because of their depredations on pasture grasses. Part at least of the damage attributed to *Oncopera* is done by *O. fuscomaculatus;* and several other species are probably also grass feeders. In the Mount Gambier district of South Australia the larvae of *O. fuscomaculatus* were found in potato fields, and they have been elsewhere blamed for hollowing out these tubers. Several species of wattles have their roots attacked by species of this genus, for example *O. dirumptus* feeds on *Acacia Baileyana* and *A. prostrata*. It is preyed upon by more than one species of frog during the time of emergence from the pupa. This observation, which was first made by Mr. C. G. L. Gooding at Moe, has led to my

([3]) Buchanan-White, F., Trans. Linn. Soc. Lond. Zool., ser. 2, i, 1878, p. 357.

suggestion that the introduction of a species of toad into Australia might assist in the control of *Oncopera* and *Oxycanus*. The Surinam toad *(Bufo agua)* was introduced into Porto Rico a few years ago, with some success, to assist in the control of a ground-burrowing mole-cricket (*Scapteriscus vicinus* Scudder).

As in the study of previous genera I am indebted to the British Museum, and to Mr. W. H. Tams in particular, for photographs of Walker's types; illustrations of some of them are reprodneed herein. Most of the figures are natnral size; in a few instances they are slightly smaller; the degree of reduction may be noticed by comparison with the dimensions given in the descriptions.

KEY TO THE SPECIES OF OXYCANUS.

a. Palpi moderate: third segment not longer than first.
  b. Caudal margin of tegumen, viewed from side, rather evenly semi-circular in outline; if armed, bearing seriate spines.
    c. Tegumen not armed with conspicuous seriate spines.
      d. Tegumen not strongly arched.
        e. Suspensorial process of tegumen short.
          f. Forewings with many silvery-white markings.
            g. Antennae with ventral surface concave — *australis*
            gg. Antennae with ventral surface not concave .. — *diremptus* / *f. kershawi*
          ff. Forewings with only few silvery-white markings.
            h. Tegumen with strongly chitinized portion narrow and smooth.
              i. Forewings with strong longitudinal white fascia .. .. .. — *diremptus*
              ii. Forewings without marked longitudinal white fascia .. .. — *waterhousei*
            hh. Tegumen with strongly chitinized portion broad and with irregular margin .. .. — *lyelli*
        ee. Suspensorial process of tegumen long .. — *fuscomaculatus*
      dd. Tegumen strongly arched .. .. .. — *perditus*
    cc. Tegumen armed with conspicuous seriate spines.
      j. Suspensorial process long .. .. .. — *janeus*
      jj. Suspensorial process short.
        k. Spines restricted to anterior half of tegumen.
          l. Spines on tegumen four in number .. — *silvanus* / *carus*
          ll. Spines on tegumen more than four .. — *herdus*
        kk. Spines not restricted to anterior half of tegumen.
          m. Antennae with strong pectinations.

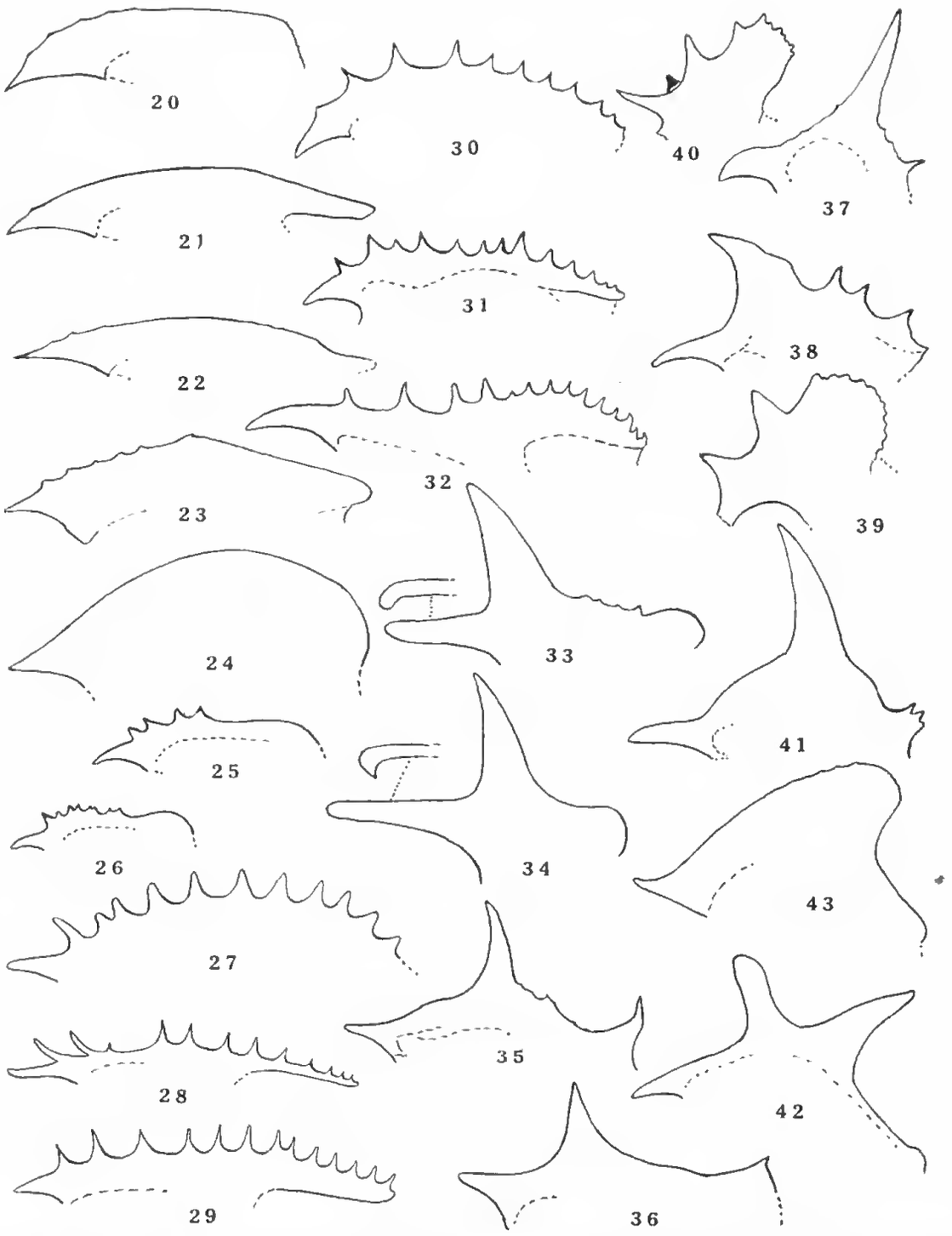


Fig. 20–43. *Oxycanus*. Latus of tegumen as viewed from side, anterior extremity to the left. 20, *O. australis* (Walker), Launceston; 21, *O. diremptus* (Walker), Healesville; 22, *O. waterhousei* sp. nov., Killara; 23, *O. lyelli* sp. nov., Eltham; 24, *O. perditus* sp. nov., W. Aust.; 25, *O. silvanus* sp. nov., Canberra; 26, *O. herdus* sp. nov., Armidale; 27, *O. bellistus* (Turner), Mount Nebo; 28, *O. ballux* sp. nov., Dorrigo; 29, *O. aurifex* sp. nov., Dorrigo; 30, *O. naias* sp. nov., Gympie; 31, *O. gelidus* sp. nov., Armidale; 32, *O. goldfinchi* sp. nov., Normanhurst; 33, *O. rosaceus* sp. nov., Moe; 34, *O. hamatus* sp. nov., Jervis Bay; 35, *O. stellans* sp. nov., Cockatoo; 36, *O. spadix* sp. nov., Blackheath; 37, *O. loesus* sp. nov., Gordon; 38, *O. occidentalis* sp. nov., W. Aust.; 39, *O. poelicus* sp. nov., Denmark, W. Aust.; 40, *O. promiscuus* sp. nov., Denmark, W. Aust.; 41, *O. sordidus* (Herrich-Schaeffer), Eaglehawk Neck; 42, *O. incanus* sp. nov., Jervis Bay; 43, *O. barnardi* sp. nov., Toowoomba.

n. Abdomen and base of hindwings salmon-pink .. .. .. *beltistus*
nn. Abdomen and base of hindwings not salmon-pink.
o. Wings subhyaline.
p. Forewings yellowish-brown with yellow markings .. *ballux*
pp. Forewings grey with yellow markings .. .. *aurifex*
oo. Wings opaque.
q. Forewings ochreous brown with brownish-black markings .. .. *naias*
qq. Forewings grey with creamy-white markings .. .. .. *gelidus*
mm. Antennae with pectinations almost obsolete .. .. *goldfinchi*
bb. Caudal margin of tegumen, viewed from side, not evenly semi-circular in outline (owing to irregular spines or protuberances).
r. Tegumen with large median, usually outwardly bent projection or lobe.
s. Median projection of tegumen acutely terminated.
t. Suspensorial spine with recurved or hooked anterior extremity.
u. Suspensorial spine short .. .. *rosaceus*
uu. Suspensorial spine long .. .. *hamatus*
tt. Suspensorial spine without recurved extremity.
v. Tegumen armed near posterior extremity.
w. Posterior portion of tegumen spined.
x. Only single posterior spine present.
y. Posterior spine remote from median one.
z. Posterior spine large .. *stellans*
zz. Posterior spine very small .. .. *spadix*
yy. Posterior spine close to median one .. *loesus*
xx. Four posterior spines present *occidentalis*
ww. Posterior portion of tegumen lobed.
a. Lobe large, with undulating or serrated margin.
b. Tegumen with an external spine absent .. *poeticus*

bb. Tegumen with an external spine present ..	*promiscuus*
aa. Lobe small, with one or more spines	*sordidus*
vv. Tegumen not armed near posterior extremity	*nuptialis*

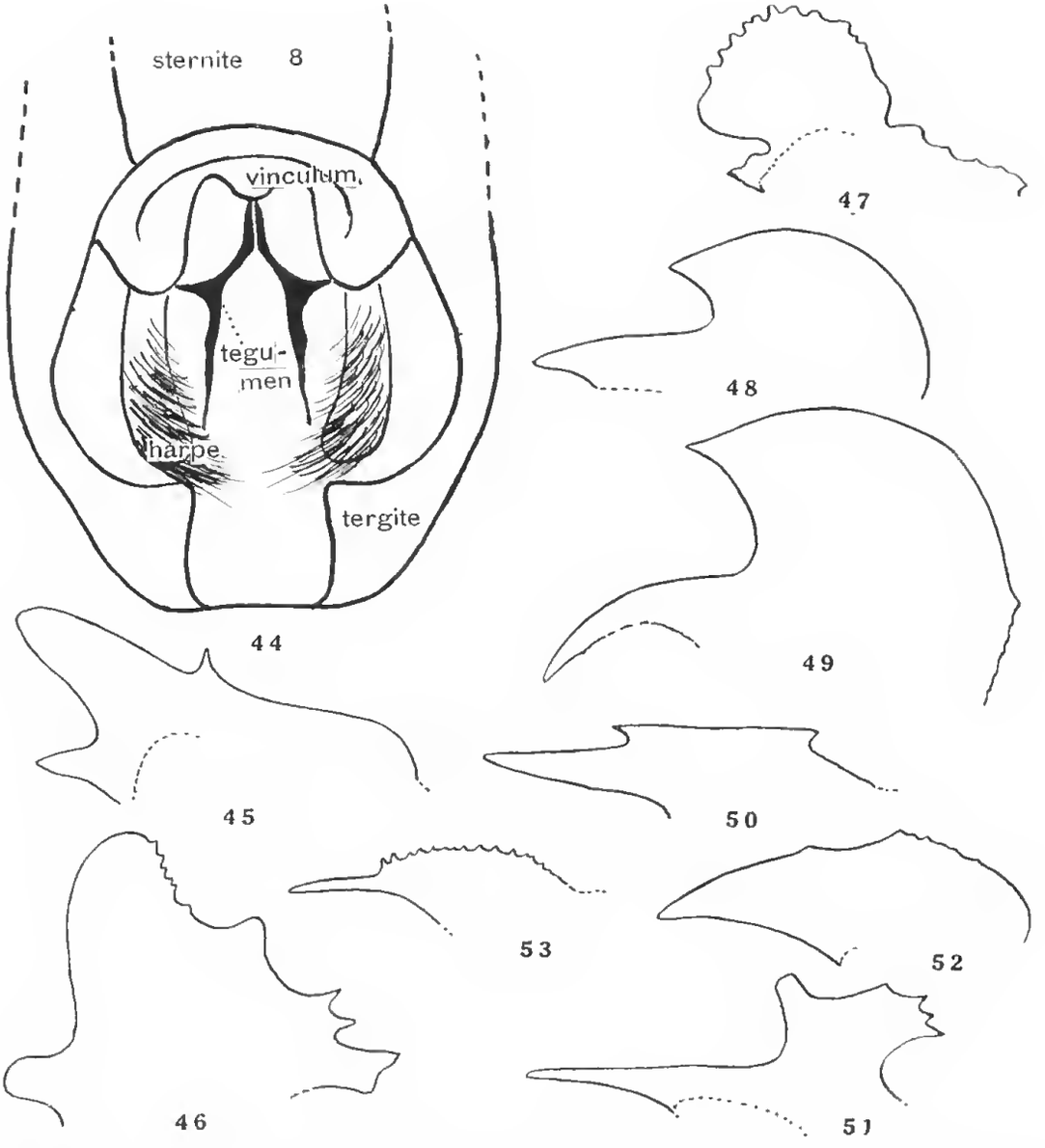


Fig. 43–53. *Oxycanus*. 44, *O. nuptialis* sp. nov., male, Mt. Kosciusko. ventral view of apex of abdomen to show tegumen. 45–53. Latus of tegumen as viewed from side, anterior extremity to left. 45, *O. niphadias* (Meyrick), Blackwood; 46, *O. goodingi* sp. nov., Moe; 47, *O. sirpus* sp. nov., Croydon; 48, *O. subvarius* (Walker), Ulverstone; 49, *O. lamnus* sp. nov., Manly; 50, *O. sphragidias* (Meyrick), Launceston; 51, *O. determinatus* (Walker), Swan River; 52. *O. fuscomaculatus* (Walker), Launceston; 53, *O. janeus* sp. nov., Tumbarumba.

ss. Median projection of tegumen not acutely terminated, but rounded or lobed.
c. Median lobe of tegumen simple.
d. Large post-median spine present .. *incanus*
dd. Large post-median spine not present.
e. Median lobe posteriorly directed .. *barnardi*
ee. Median lobe anteriorly directed .. *niphadias*
cc. Median lobe of tegumen not simple.
f. Serrations present on posterior margin of lobe .. .. *goodingi*
ff. Serrations not restricted to posterior margin of lobe .. *sirpus*
rr. Tegumen without large, median, usually outwardly bent projection or lobe.
g. Tegumen with anteriorly directed, post-suspensorial spine or projection.
h. Median portion of tegumen arched.
i. Anterior suspensorial spine short and straight .. .. *subvarius*
ii. Anterior spine long and curved .. *lamnus*
hh. Median portion of tegumen straight .. *sphragidias*
aa. Palpi long; third segment longer than first .. .. *determinatus*

NOT KEYED.

Oxycanus maculosus (Felder), *O. acclesimus* (Turner), and *O. hyrsus* (Pfitzner).

OXYCANUS AUSTRALIS Walker.

Fig. 13, 20, 54-55.

Oxycanus australis Walker, List Lep. Ins. Brit. Mus. vii, 1856, p. 1574.
Porina australis Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1121.

♂ Antennae reddish-ochreous, moderate, pectinations 3, set obliquely so that the antennae are concave below. Head, thorax and legs grey; abdomen ochreous, towards base a little more reddish. Forewings greyish-brown, costa narrowly darker; a series of silvery-white spots over whole of wing and a longitudinal white fascia from base to R_5 at about two-thirds. Hindwings uniformly ochreous, densely clothed with reddish-tinged bright ochreous hairs at base. Expanse 90 mm.

♀ Antennae ochreous, short, feebly bidentate. Head, thorax, and apex of abdomen ochreous fawn, base of abdomen dull ochreous. Forewings with apex acute, pale ochreous-fawn with faint paler ochreous and grey markings somewhat as in male, but larger and obscure. Hindwings with apex rather acute, hyaline, pale grey with dense pale ochreous hairs at base. Expanse 104 mm.

Loc. Tasmania: Maitland; Launceston 5; Sheffield; Longford 4. Victoria (allotype female I. 18850 in S. Aust. Mus.); Wilson Promontory 5; Brighton; Kewell; Gippsland; Melbourne 5. South Australia: Robe 4; Mount Gambier 5, 6. 21 males, 2 females.

I am indebted to Mr. W. H. Tams for the following information regarding the type in the British Museum: "Walker's type is one of the two specimens

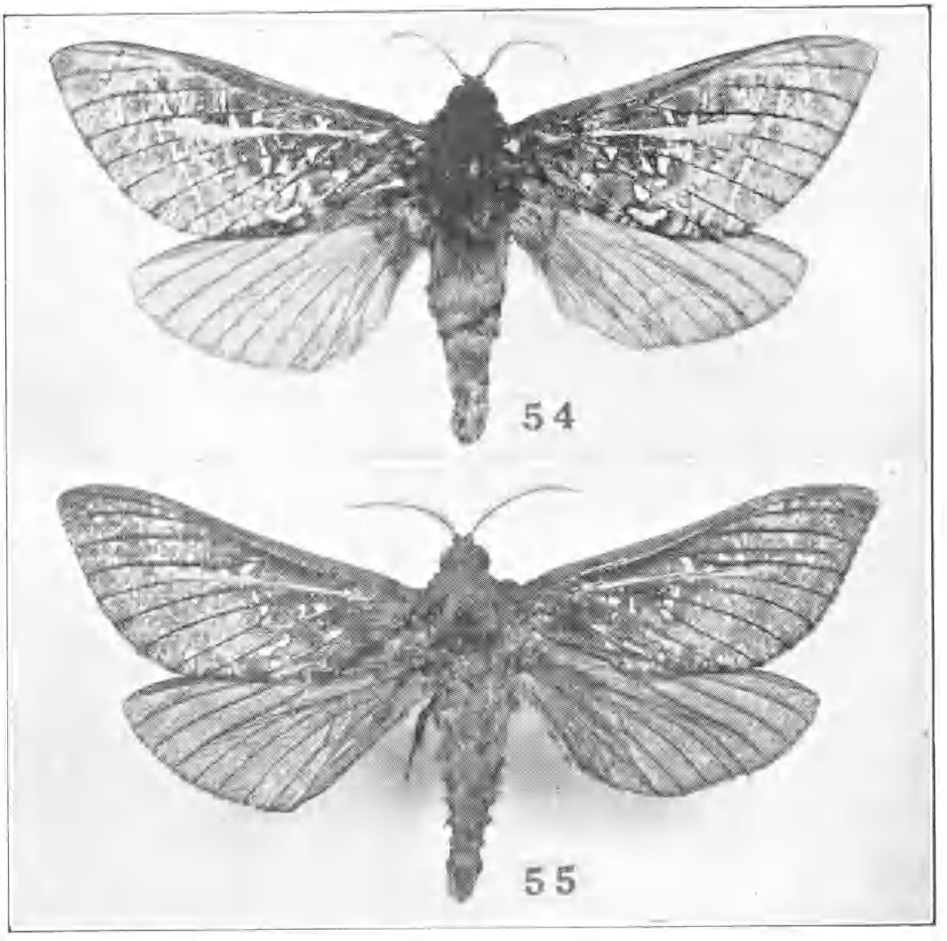


Fig. 54–55. *Oxycanus australis* (Walker). 54, male, Robe; 55, type, a male, Tasmania. (British Museum Collection).

listed . . . under his description on p. 1574, as *c*, *d*. Van Dieman's Land. Presented by J. G. Children, Esq. These two specimens bear old registration numbers $\frac{40.6.29}{5.}$ and $\frac{40.6.29}{6.}$". The type is the last-named example.

The male described is one from Maitland, the female is from Victoria (ex Lucas Coll.). The Maitland example agrees very well with the photograph of the type and with an example in the National Museum Collection, which was identified by Walker himself. The South Australian examples have the hindwings sub-hyaline, with a subterminal series of faint grey maculae, like water-

marks, but the form is not sufficiently marked to warrant even sub-specific separation.

The late F. M. Littler, of Launceston, took male examples of this species at lights, in May. In Tasmania a melanic form also occurs; in it the forewings are dark brown and the hindwings a dull brown, except at base, where they are reddish-ochreous. Some examples have the silvery-white marks enlarged; in others they may be obsolescent. Nothing is known regarding the life history.

O. maculosus (Felder) has been considered to belong to this species, but the differences observable in the photograph of the type (fig. 127), particularly in the form of the wing, should be sufficient to separate it. Unfortunately it has not been possible to have the genitalia of this species examined; the unique type is in the Tring collection.

The figure of *O. australis* given by Pfitzner and Gaede is probably based on Felder's *O. maculosus* and does not adequately represent the present species.

O. australis differs from *O. diremptus* in the form of the antennae, which are concave beneath; a form of the latter species resembles it in wing markings but is structurally distinct.

The male genitalia have the tegumen evenly arched, and practically unarmed, except for several minute projections on the anterior half, the strongly chitinized portion of the posterior extremity of the tegumen is not produced to the same degree as in *O. diremptus*.

OXYCANUS DIREMPTUS (Walker).

Fig. 18, 21, 56-57.

Porina dirempta Walker, List Lep. Ins. Brit. Mus., xxxii, 1865, p. 597.
Porina dirempta Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1121.
Porina kershawi Lucas, Proc. Linn. Soc. N.S. Wales, vi (2), 1891, p. 282.

♂ Antennae dark reddish-ochreous, moderate, pectinations 3, conspicuous apical tufts present, smaller paired projections also present at base of each segment; head, thorax, and legs dark chocolate-brown, above with a greyish tinge; abdomen salmon-pink, base and apex slightly darker. Forewings with costal margin narrowly dark chocolate-brown, ground colour mixed reddish-ochreous and chocolate-brown; a transverse white fascia from costa at ⅔ths to hind margin, a white streak from base to meet a broad terminal white suffusion; hind margin rather broadly suffused with grey scales; there are two silvery-white subcostal marks. Hindwings salmon-pink with traces of darker scales in an area near hind margin. Expanse 76 mm.

♀ Antennae reddish-ochreous, short, feebly bidentate; head and thorax chocolate-brown with a grey tinge; abdomen salmon-pink, at apex dull brown.

Forewings chocolate-brown with a white fascia from base to one half termen, and traces of dark grey markings in outer third. Hindwings bright salmon-pink. Expanse 110 mm.

Loc. Victoria: Moe 4 (topotype male April 17th, 1934, and allotype female April 25th, 1932, C. G. L. Goodiug 1. 18851 in S. Aust. Mus.); Gisborne 3, 5;

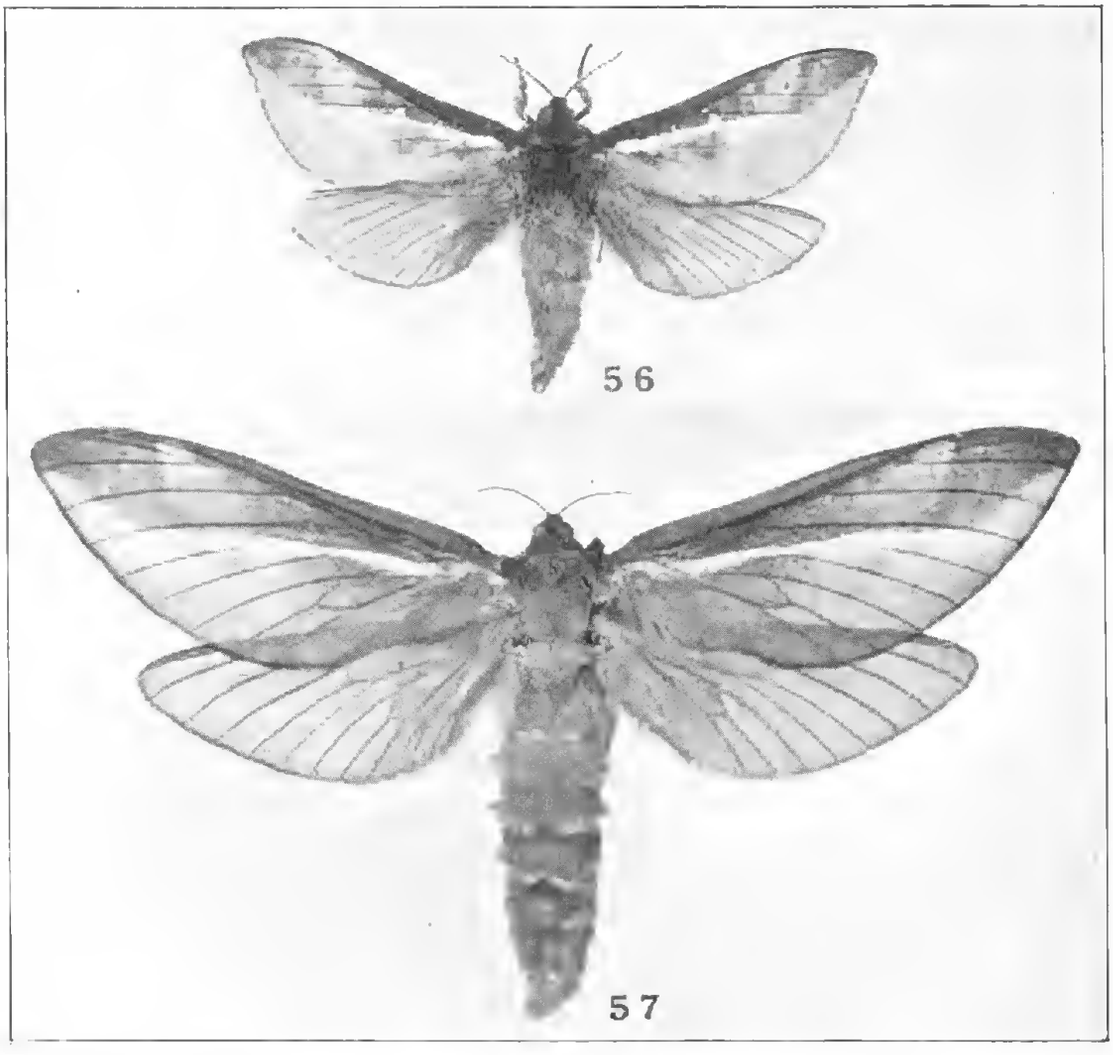


Fig. 56–57. *Oxycanus diremptus* (Walker). 56, type, a male, Southern Australia; 57, allotype female, Moe.

Toolangi 4; Healesville 5; Beaconsfield 4, 5; Ferntree Gully 4. *f. kershawi*, Eltham; Moe 4, 5. 41 males, 16 females.

The type, which is in the British Museum, has been figured. The example described above was selected from many examples taken at Moe, because of its close resemblance in detail to the type specimen. The allotype female, described above, is also from Moe.

The locality of Walker's type is given as "South Australia", which was probably used, as in other cases, in the sense "Southern Australia". The species is not known in our State, and I therefore nominate Moe, in Victoria, as the type locality. This species is allied to *O. australis*, from which it differs markedly in the structure of the antennae, and to a lesser degree in the male genitalia. The pectinations of the antennae are so set upon the segment that they do not form a concavity on the lower surface, i.e. they are transverse; in *O. australis* they are set at an obtuse angle, forming in the aggregate a well-marked inferior groove. Some examples are superficially difficult to separate from *O. australis* owing to the marked resemblance in wing pattern. The *O. australis* like examples may be known as *O. diremptus f. kershawi* (Lucas). This form occurs in the same localities as the typical one, and both may be obtained out of pupae emerging from beneath the same tree; it is therefore not a geographical race. Structurally the specimens are the same as *O. diremptus* examples, and are thus readily distinguishable from *O. australis*. Lucas's type specimen of this form is from Eltham (I. 18852 in S. Aust. Mus.).

The male genitalia differ from those of *O. australis* in the greater prolongation of the posterior extremity of the tegumen. This has the margin evenly curved and devoid of armature.

The larvae feed on the roots of wattles (*Acacia Baileyana* and *A. proseumbens*), and from their abundance must seriously affect the growth of these trees. On April 20th, 1930, Mr. C. G. L. Gooding obtained freshly-emerged moths, empty pupal shells, and many loose wings of both sexes of the *O. diremptus* at Moe. Many of the newly-emerged moths had been preyed upon by frogs, especially *Hyla ewingi* var. *calliscelis* and *Limnodynastes dorsalis* var. *dumerili*. The pupal shells, which are pale castaneous-brown, vary in length from 44-48 mm. (males), and from 55-60 mm. (females); they indicate that the pupa was relatively short and stout. The mask bears paired submedian blunt-pointed facial protuberances, a median buccal eminence, and at the base of the antennal sheath there are two stout heavily chitinized spines, internal to which there is a small rounded eminence bearing a pair of long fine sensitive setae; other setae occur at the base of the buccal portion of the mask.

Mr. E. Gooding has taken several pairs at Moe on a different site from that where Mr. C. G. L. Gooding has captured so many examples. They show marked variation from the normal form. There are also some specimens before me from Woodford, in New South Wales, which may belong to this species, but they appear to be aberrant in colour and markings.

The figure by Pfitzner and Gaede (in Seitz Macrolepidoptera x, 1933, pl. 76d) under this name does not represent the species.

OXYCANUS WATERHOUSEI sp. nov.

Fig, 22, 58-59.

♂ Antennae reddish-ochreous, moderate, pectinations stout, 2; head, thorax, and forelegs greyish-fawn, abdomen reddish-ochreous. Forewings reddish-ochreous with paler suffusions and dark brown markings; two large dark-brown-

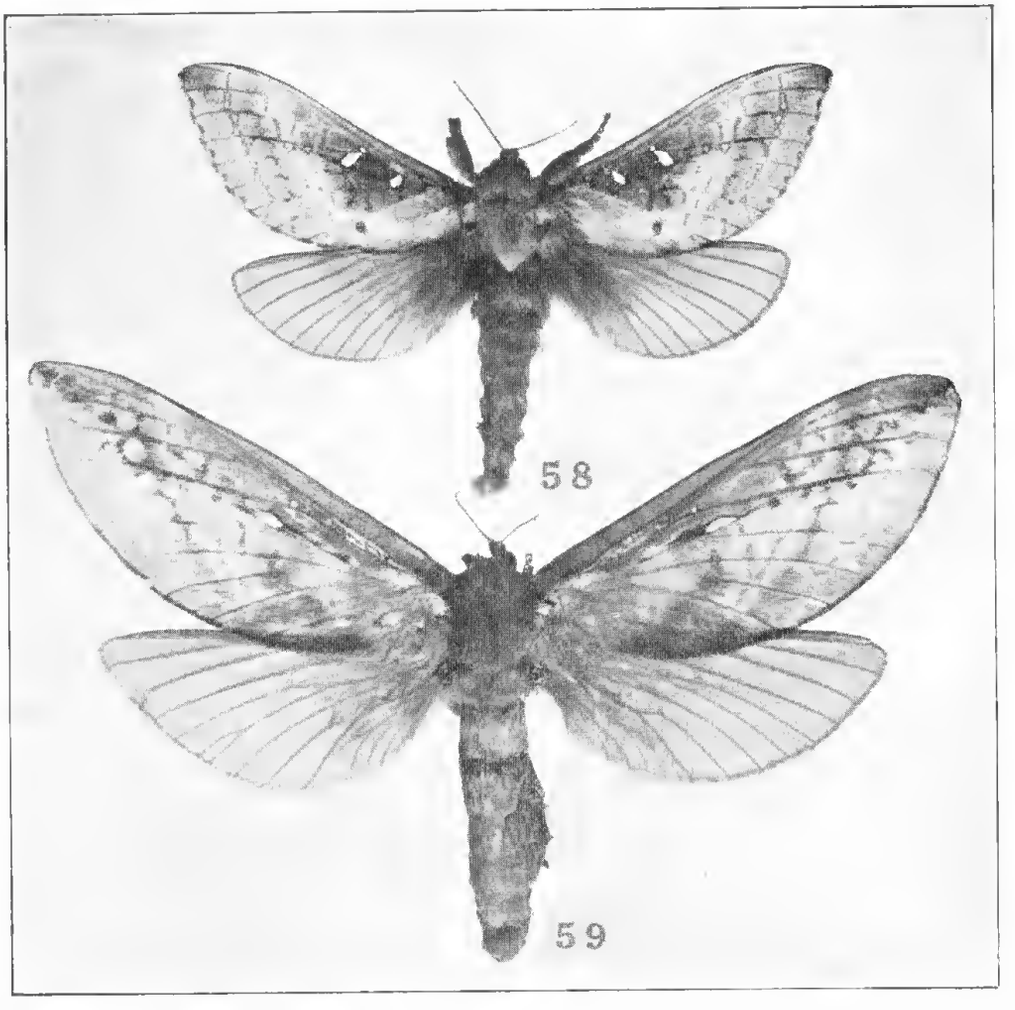


Fig. 58–59. *Oxycanus waterhousei* sp. nov. 58, type, a male, Wentworth Falls; 59, allotype female, Killara.

margined silvery-white spots between r-m vein and base; a series of dumb-bell-shaped brown marks parallel to termen, each with a pair of dull white centres. Hindwings bright reddish-ochreous, densely clothed with hair at base. Expanse 82 mm.

♀ Antennae reddish-ochreous, short, feebly bipectinate; head and thorax pale chocolate-brown, abdomen pale reddish-ochreous. Forewings reddish-och-

reous, with paler suffusions on outer third; inner margin broadly suffused with pale chocolate-brown, a silvery-white spot at r-m vein. Hindwings uniformly reddish-ochreous. Expanse 116 mm.

Loc. N.S. Wales: Wentworth Falls 5 (type, a male, I. 18853 in S. Aust. Mus.); Killara 5, 6 (G. A. Waterhouse allotype female I. 18854); Mittagong 4; Roseville 5; Blackheath; Robertson 4. Queensland: Stanthorpe. 9 males, 2 females.

The pair of large white marks on forewings is a comparatively constant feature, traces of which are also present in the female. Occasional examples of *O. dircmptus* approach this species in appearance but the genitalia of the male are different.

There are several undescribed specimens in our collection from localities in Queensland and New South Wales, which are quite different from this species in general appearance and yet have very similar structural characters in the genitalia. When further material is available it will probably be found that they include several distinct species.

OXYCANUS LYELLI sp. nov.

Fig. 23, 60-61.

♂ Antennae reddish-ochreous, rather short, pectinations stout, closely set, 1½; head and thorax dark grey; abdomen reddish-ochreous, at apex paler. Forewings pale reddish-ochreous with traces of darker markings, a silvery-white fascia from base to termen, and a broad transverse whitish suffusion. Hindwings reddish-ochreous, rather hairy at base. Expanse 80 mm.

♀ Antennae reddish-ochreous, slender, obsoletely bidentate; head and thorax pale chocolate-brown; abdomen reddish-ochreous. Forewings pale reddish-ochreous with traces of darker markings and of a white-centred brown mark at r-m vein; inner margin clothed with chocolate-brown scales. Hindwings subhyaline, pale reddish-ochreous, densely clothed with reddish-ochreous hairs at base. Expanse 106 mm.

Loc. Victoria: Riddell 4; Eltham (type a male, W. W. Smith, I. 18855 in S. Aust. Mus.); Wooryallock 4 (allotype female, April 10, 1921, L. B. Thorn, I. 18856 in S. Aust. Mus.); Healesville 4; Gisborne 4; 7 males, 2 females.

The male figured is a paratype; the female is the allotype. This species is closely allied to *O. dircmptus*, from which it differs in the wing markings and in the form of the tegumen of the male. A male example labelled "Roseville, N.S. Wales" ex Lower collection, probably belongs to this species, but there may have been some mistake in the labelling.

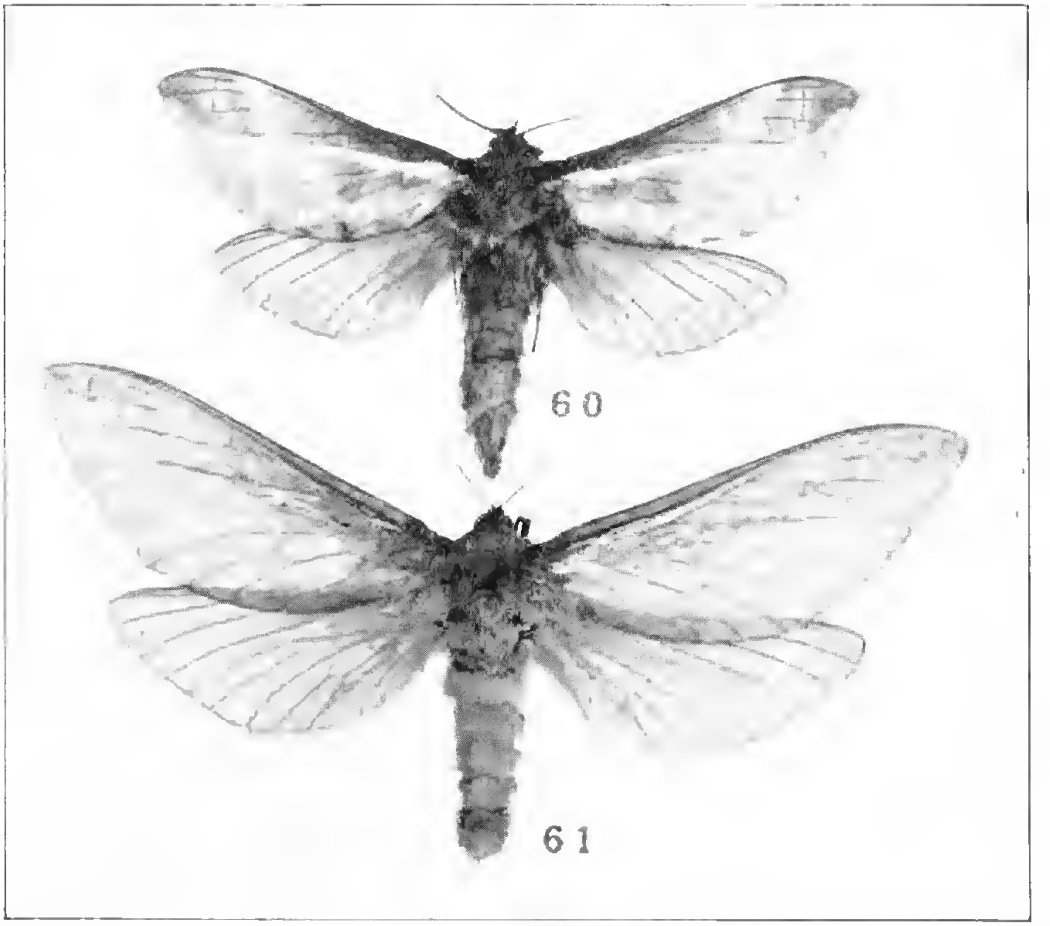


Fig. 60–61. *Oxycanus lyelli* sp. nov. 60, paratype male, Riddell; 61, allotype female, Woori yallock.

OXYCANUS FUSCOMACULATUS Walker.

Fig. 52, 62-65.

Oxycanus fuscomaculatus Walker, List Lep. Ins. Brit. Mus., vii, 1856, p. 1574.
Oxycanus pardalinus Walker, *l.c.*, xxxii, 1865, p. 598.
Porina fuscomaculata Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1120.
Porina fuscomaculata Pfitzner and Gaede, Seitz Macrolep., x, 1933, p. 839.
Oxycanus fuscomaculatus Eyer, Ann. Ent. Soc. Amer. xvii, 1924, p. 305.

♂ Antennae bright yellow, ample, pectinations long and slender, 5; head and thorax dark brown, abdomen slightly paler. Forewings dark brown, with some pale yellow scales and darker brown markings, a subrectangular black spot half-way between r-m vein and base. Hindwings subhyaline, with apical half pale grey, at veins and margins darker, basal half pale orange-yellow. Expanse 73 mm.

♀ Antennae short, pectinations 1; head, thorax, and abdomen rather uniformly greyish-brown, wings hyaline, greyish-brown; traces of a darker mark at r-m vein. Expanse 78 mm.

Loc. New South Wales: Lithgow 5. Victoria: Croydon 5, 6; Box Hill 5; Mooney Gap; Pakenham 6; Gisborne 4, 5, 6; Evelyn 6; Beaconsfield 6; Lower Ferntree Gully 6; Macedon 4, 5; Hawthorn 5; Wandin 5; Narnargoon; Moe 5, 6; Cunningham 5; Melbourne; Balwyn 6. Tasmania: Lefroy 6; Sandford; Launceston 5; Piper River. South Australia: Penola 5; Yahl 5, 6; Mt. Gambier; Morack. Western Australia: Quairading. 272 males, 42 females.

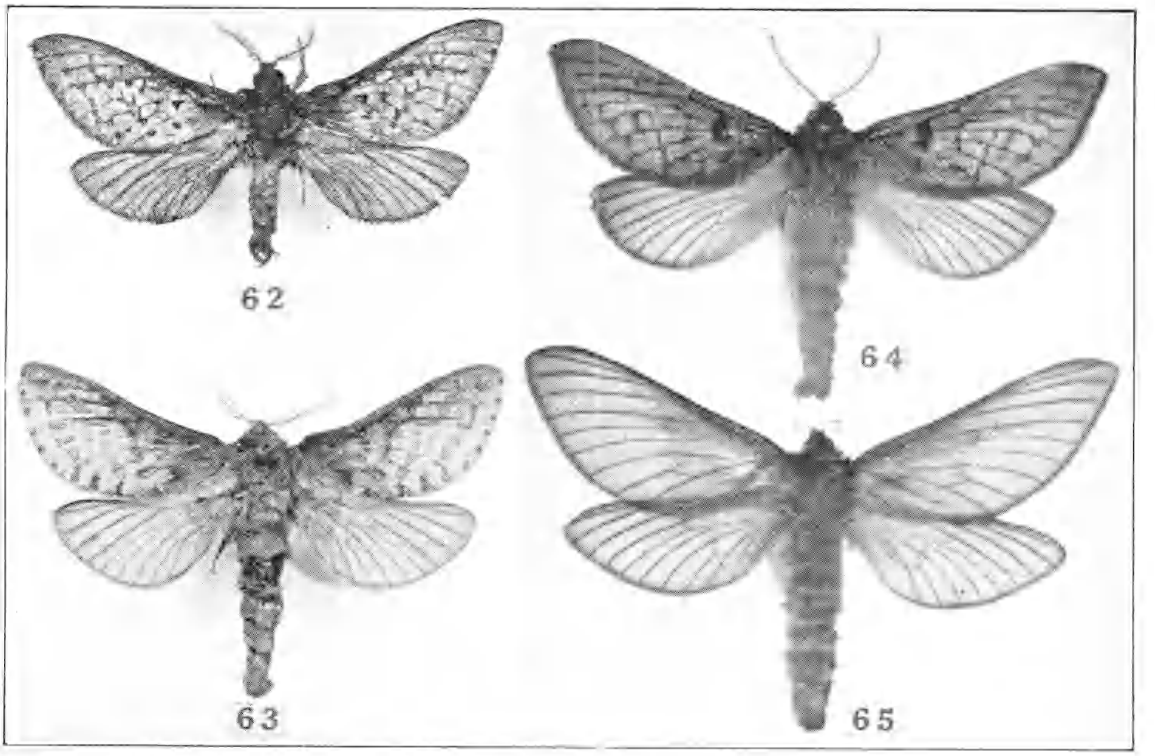


Fig. 62–65. *Oxycanus fasciomaculatus* (Walker). 62, type, a male (British Museum Collection); 63, male, Southern Australia (type of *pardalinus* Walker, in British Museum Collection); 64, male, Moe; 65, female, Moe.

The described examples are from Moe; they differ from the figure of the type form in the presence of the yellowish suffusion on abdomen and base of hindwings (I. 18857 in S. Aust. Mus.). This is a widely-spread and variable species. The type of *O. pardalinus* Walker is stated to be from "South Australia"; this means "Southern Australia". Several geographic races should be distinguishable when more systematic collecting has been done, and the type locality satisfactorily established.

Mr. E. Guest had two pupae brought to him in April, 1896; they had been

found by a person digging potatoes at Morack (Mt. Gambier). They emerged in May; one proved to be a female. The pupa is very long and active, yellow, with head region and wing cases nearly black. The larva has been blamed for hollowing out potatoes in the field. A female was taken by the late Mr. A. M. Lea, at Piper's River, Tasmania; it was attracted to lights.

OXYCANUS PERDITUS sp. nov.

Fig. 24, 66.

♂ Antennae ochreous, pectinations 2½ (only partly preserved). Head and thorax dark brown, abdomen salmon-pink. Forewings rather uniformly dull brown, with costa a little darker, a series of greyish-white marks, an inverted L-shaped one at r-m vein, a series of four forming a linear series across middle of

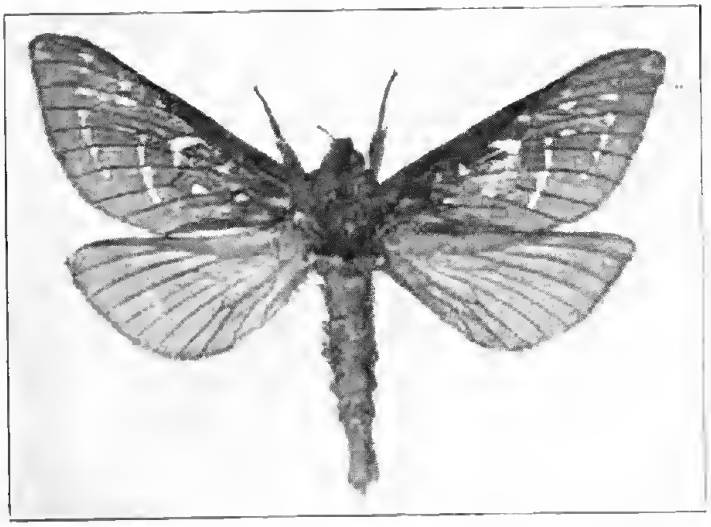


Fig. 66. *Oxycanus perditus* sp. nov. type, a male, W. Australia.

wing from M_1 to Cu_{1b}; a subterminal series of six smaller ones and four irregularly shaped ones in region of the radial veins; ciliae concolorous with wings. Hindwings pale brown with basal third pink, densely clothed with salmon-pink hairs. Expanse 67 mm.

Loc. Western Australia (type, a male, I. 18858 in S. Aust. Mus.), 1 male.

The only specimen was obtained, without data, from a collection originating in South-Western Australia. The smooth semi-circular margin to the tegumen of the male genitalia at once distinguishes it from all its congeners. In general appearance it seems to be close to aberrant specimens of *O. sordidus*, from which it differs widely in the form of the tegumen of the male genitalia. The salmon-pink base to the hindwings is characteristic of many species of the genus.

OXYCANUS JANEUS sp. nov.

Fig. 53, 67-69.

♂ Antennae bright ochreous, moderate, pectinations long, slender, 5; head and thorax dark greyish-brown; abdomen paler. Forewings dark greyish-brown with obscure patches of paler brown scales embracing traces of dark brownish-black markings (in some varietal specimens several of these are more defined, and contain dull white ocelli). Hindwings subhyaline, dull greyish-brown, base dull ochreous. Expanse 66 mm.

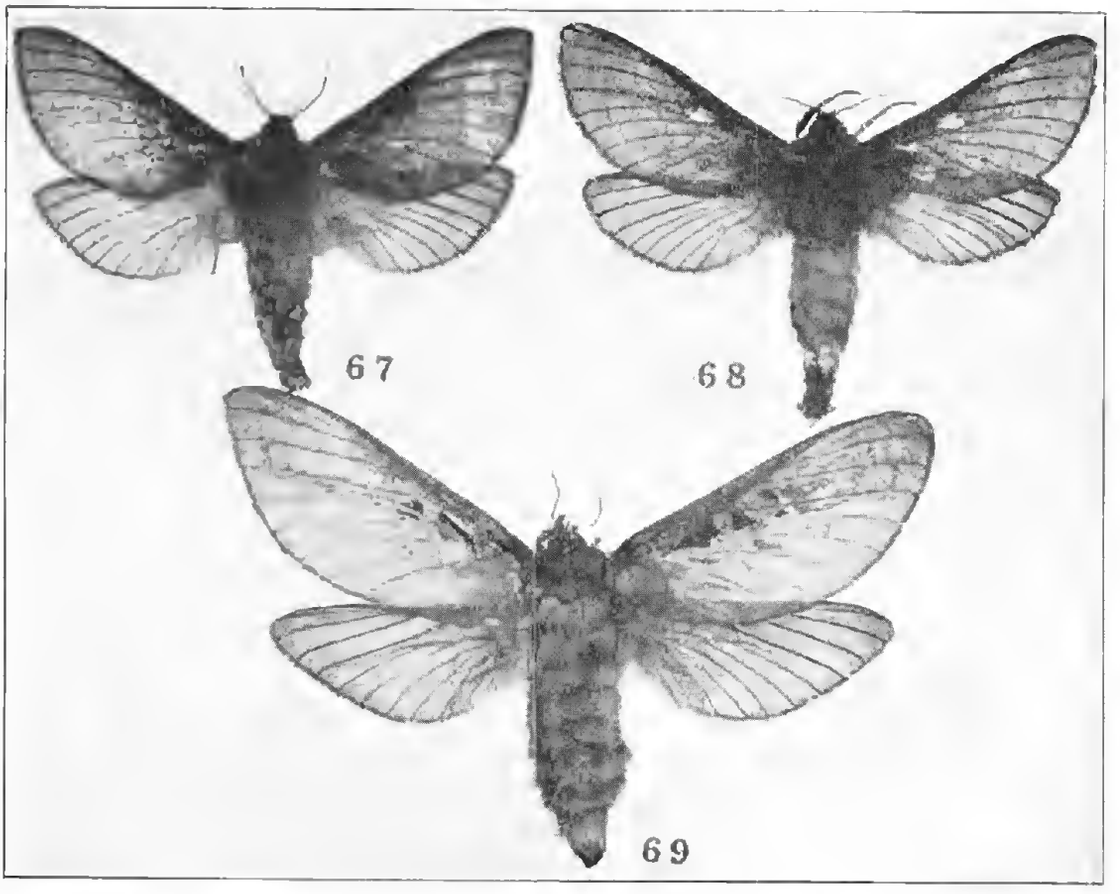


Fig. 67–69. *Oxycanus janeus* sp. nov. 67, type, a male, Tumbarumba; 68, paratype male, Tumbarumba; 69, allotype female, Tumbarumba.

♀ Antennae ochreous, short, feebly bipectinate. Head, thorax, and abdomen pale greyish-brown. Forewings greyish-brown with obscure darker grey markings; two well defined dull black marks between r-m vein and base. Hindwings greyish-brown, base slightly browner. Expanse 89 mm.

Loc. N.S. Wales: Tumbarumba 5 (May 21, 1929, R. J. Tillyard, type a male, and allotype female, I. 18859 in S. Aust. Mus.). 11 males, 4 females.

This species is allied to *O. fuscomaculatus*, from which the male differs in the positions of the obscure wing markings, in the occasional presence of a large white ocellate mark internal to the radio-median cross vein (fig. 68), and in the very different tegmen, which has a long narrow suspensorial process and a serrated margin. Most of the known examples were taken on the one evening. Nothing has been reported regarding its life history.

OXYCANUS SILVANUS sp. nov.

Fig. 25, 70-72.

♂ Antennae bright yellow, pectinations 3; head above dull brown, beneath blackish-brown; palpi short, erect, dark brown, thorax dull greyish-brown, abdomen somewhat paler ochreous. Forewings dull greyish-brown with numerous pale ochreous or dull white marks, each containing one or at most two greyish-brown spots. Hindwings greyish-brown, base clothed with dense but short ochreous-brown hair, ciliae concolorous. Expanse 67 mm.

Loc. New South Wales: Canberra 6 (June 5, 1929, G. A. Waterhouse, type a male, I. 18860 in S. Aust. Mus.); Jenolan Caves 6. Victoria: Seymour 6. 20 males.

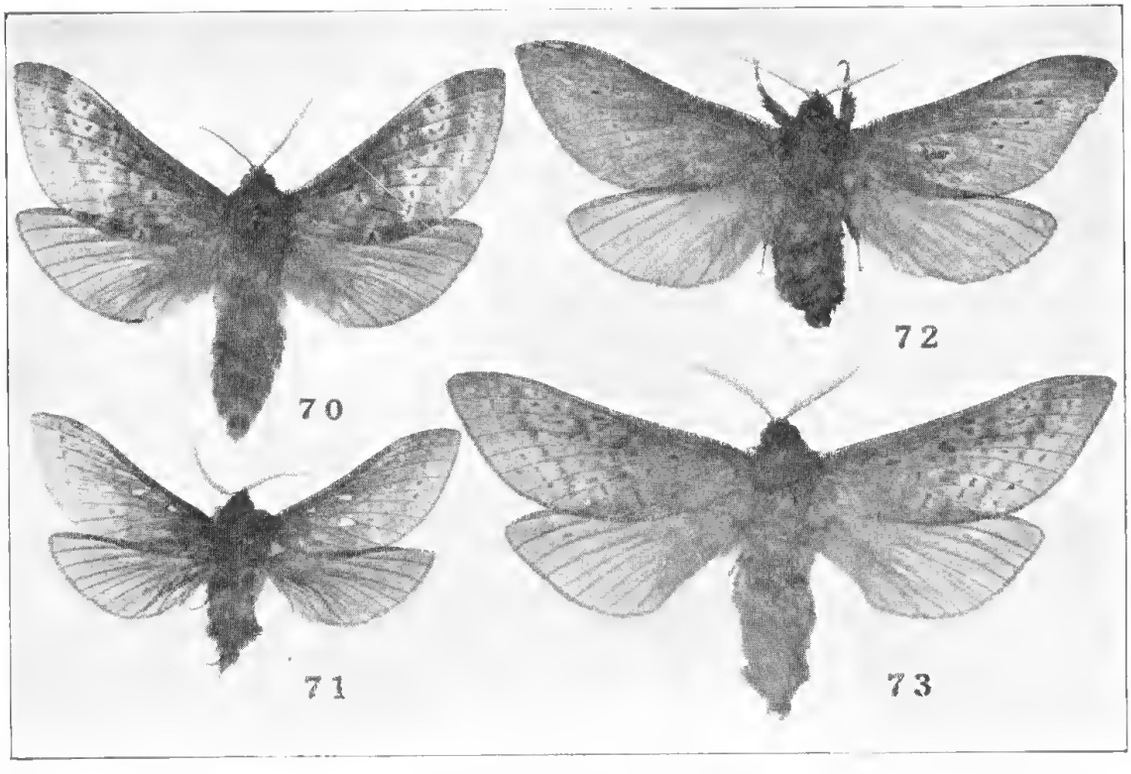


Fig. 70–73. *Oxycanus silvanus* sp. nov. 70, type, a male, Canberra; 71, male, Jenolan Caves; 72, male, Seymour; 73, *Oxycanus carus* sp. nov., type, a male, Armidale.

This species is either somewhat variable or separations based on the characters of the male tegmmen are insufficient. A series of ten males taken with the type show a transition towards the form shown in fig. 72, from Seymour, in which the forewing markings are obsolete and the hindwings are broadly pale reddish-ochreous. Two mislocalized specimens from the J. Hopson Collection possess a large radio-median white spot, and a second one or traces of one about half way to base. The next species possesses very similar genitalia, but differs in wing form and disposition of the markings. The tegmmen usually bears four spines on the anterior portion of the margin.

OXYCANUS CARUS sp. nov.

Fig. 73.

♂ Antennae pale yellow, ample, pectinations long, slender, pubescent, 4; head and thorax pale fawn, abdomen pale reddish-ochreous. Forewings pale brown, with pale yellow suffused areas around brown markings. Hindwings pale reddish-ochreous, tending to pale yellow. Expanse 83 mm.

Loc. New South Wales: Armidale (April, 1928, type, a male, I. 18861 in S. Aust. Mus.). Queensland: Stanthorpe; 2 males.

The tegmmen of this species, which was recognized after the key had been completed, is similar to that of *O. silvanus*, from which it is distinct in the form of the wings, and in details of the disposition of the wing markings. It is also allied to *O. herdus*, in which the markings are more symmetrically arranged. The Stanthorpe example is smaller (75 mm.) and the hindwing is lemon-yellow, except at base, which is bright ochreous, and concolorous with the abdomen.

OXYCANUS HERDUS sp. nov.

Fig. 26, 74-75.

♂ Antennae pale fawn, rather long, pectinations long, pubescent, 3; head and thorax pale fawn, abdomen ochreous with a faintly pink tinge. Forewings pale fawn, with three transverse series of regularly arranged fawn spots, surrounded by pale ochreous. Hindwings pale ochreous, at base with a pink tinge. Expanse 76 mm.

♀ Antennae pale ochreous, short, bipectinate, 1; head, thorax, and apex of abdomen pale fawn, base of abdomen pale ochreous. Forewings pale ochreous with a faint irregular grey suffusion near apex and along inner margin. Hindwings pale fawn with basal portion broadly pale ochreous. Expanse 96 mm.

Loc. New South Wales: Armidale (June 4, 1927. R. E. Barnard, type, a male, and allotype female, I. 18862 in S. Aust. Mus.). 1 male, 1 female.

This species emerges about two months after *O. carus*, to which it is closely allied. It differs from both *O. carus* and *O. silvanus* in the more regular arrangement of the markings on the forewings. The anterior portion of the tegumen of the male genitalia bears about eight spines.

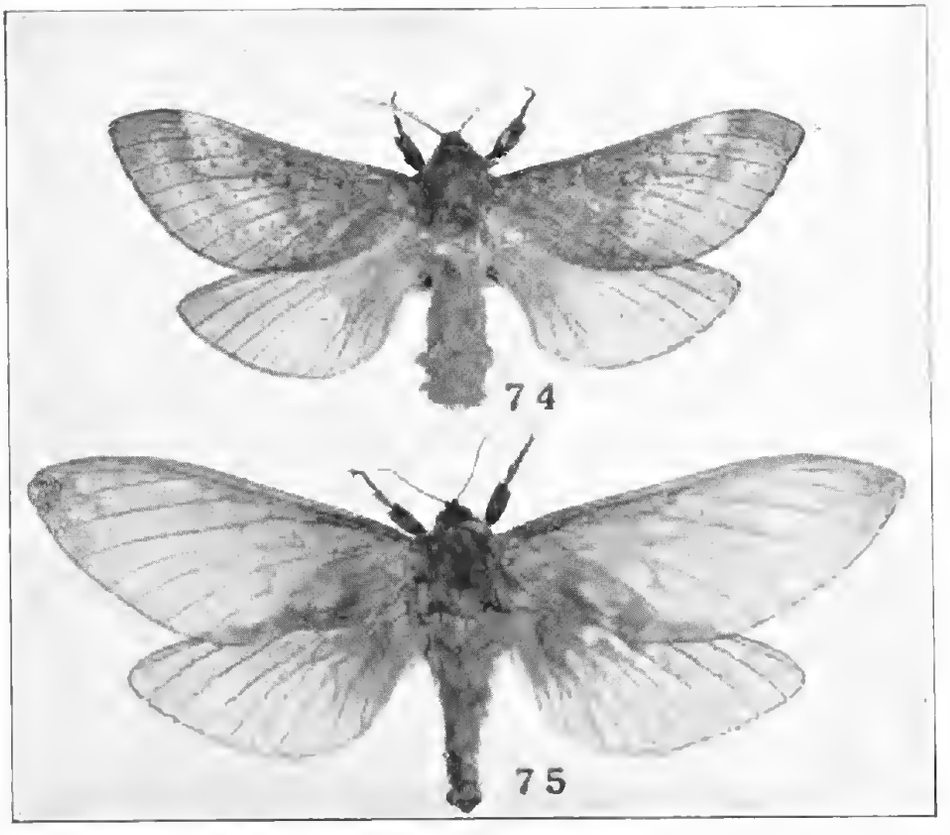


Fig. 74–75. *Oxycanus herdus* sp. nov. 74, type, a male, Armidale; 75, allotype female, Armidale.

OXYCANUS BELTISTUS (Turner).

Fig. 27, 76.

Porina beltista Turner, Trans. Roy. Soc. S. Aust., l. 1926, p. 155.

♂ Antennae reddish-ochreous, moderate, pectinations short, stout, 1-1½; apex of each pectination with large tuft of ciliae; head and thorax ochreous-brown; abdomen pale red. Forewings ochreous-brown, slightly darker towards base, costa suffused with darker brown from base to ⅔rds; traces of obscure brownish spots and suffusions towards apex. Hindwings along costa and hind margin pale red, tending to pink, brighter near base, centre of wing obscurely

tinged with grey, apex tinged with ochreous; ciliae ochreous; wings beneath reddish-ochreous. Expanse 100 mm.

Loc. Queensland: Mount Nebo (May 27, 1923, type, a male, in Turner Collection); Blackbutt 4. 3 males.

The three examples under examination differ considerably from each other in the markings of the forewings. Further material may show that the Blackbutt examples are not conspecific with the type from Mt. Nebo (which is near Brisbane). The above description, except for that of the antennae and head, applies particularly to the type example, in which the head is wanting. In one Blackbutt

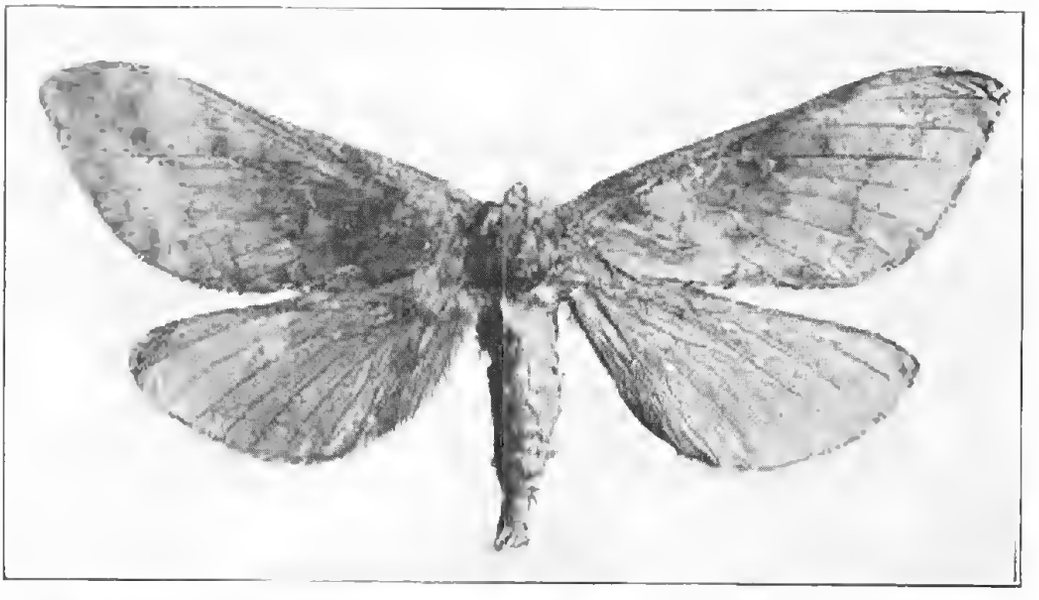


Fig. 76. *Oxycanus bilitistus* (Turner), type, a male, head mutilated, Mt. Nebo.

example there is a white fascia from base to $\frac{1}{2}$ termen, where it becomes diffused. The hindwings are pale ochreous, tinged with salmon-pink. In the other the forewings are dark brown, the fascia is absent, and there are two large conspicuous silvery-white spots in disc; the inner one rectangular and enclosing a dark spot; the hindwings have a grey suffusion as in the type example.

The members of this and the five succeeding species are related by the form of the tegminal margin of the male genitalia, which bears a series of large spines. These do not vary greatly in the species. The antennae differ markedly in the degree of pectination in the different species, and the form of the wing and the markings appear to yield excellent specific characters. All the species are rare, and appear to be restricted to the various sub-tropical forest or "brush" areas in New South Wales and Southern Queensland; no female examples have yet been taken, and there are doubtless species still to be discovered.

OXYCANUS BALLUX sp. nov.

Fig. 28, 77.

♂ Antennae reddish-ochreous, short, feebly bipectinate, 1-1¼; head and thorax pale ochreous-brown, abdomen dark chocolate-brown, apex with a pale brown tuft. Forewings pale ochreous-brown with obscure darker, transverse, suffused marks at one-half and near termen: brown-margined yellow spots below R_5 and M_1 veins; a slightly larger one at r-m vein and another, still larger, half-

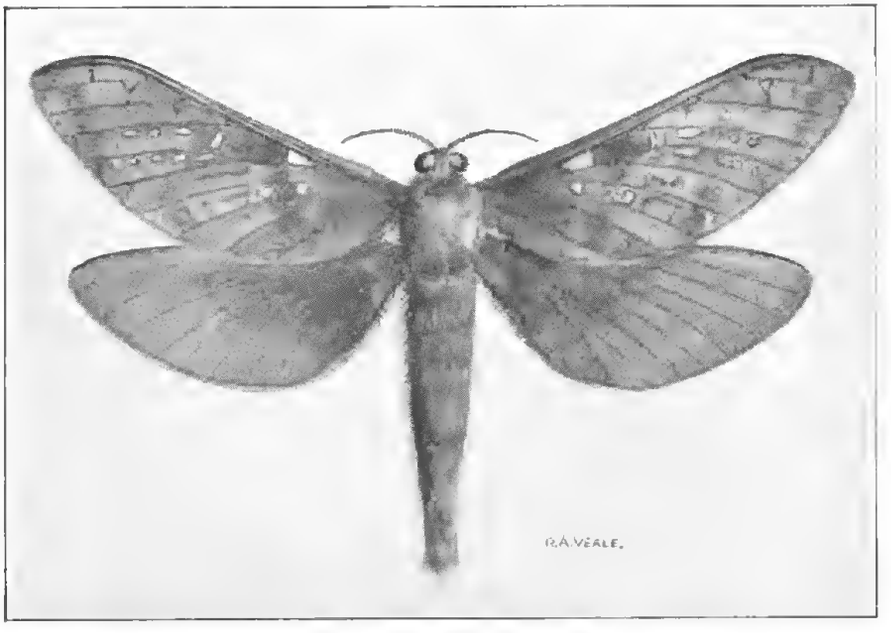


Fig. 77. *Oxycanus ballux* sp. nov., type, a male, Dorrigo.

way to base. Hindwings sub-hyaline, dark chocolate-brown, costa narrowly ochreous. Expanse 90 mm.

Loc. New South Wales: Dorrigo (R. J. Tillyard ex. Lower Collection, type, a male, I. 18863 in S. Aust. Mus.). 1 male.

Allied to *O. gelidus*, from which it differs in the form of the scales of the forewings, which are narrower and more widely-spaced, giving the wings a lustrous appearance. The tegumen of the male genitalia is of much more fragile appearance, with larger spines, and a chitinized margin narrower than in any of the other members of the *O. bellistus* group.

OXYCANUS AURIFEX sp. nov.

Fig. 29, 78.

♂ Antennae reddish-ochreous, long, bipectinate, 2; head and thorax greyish-fawn, abdomen paler fawn. Forewings subfalcate at apex, greyish-brown with

numerous faint hour-glass-shaped pale marks, and obscure paired dark brown spots with obscure ochreous centres; a larger yellow spot at r-m vein, and another half-way to base, also a few scattered smaller ones in discal region of wing; a series of dull golden-yellow blotches grouped about the base of wing. Hindwings hyaline, dull greyish-brown. Expanse 98 mm.

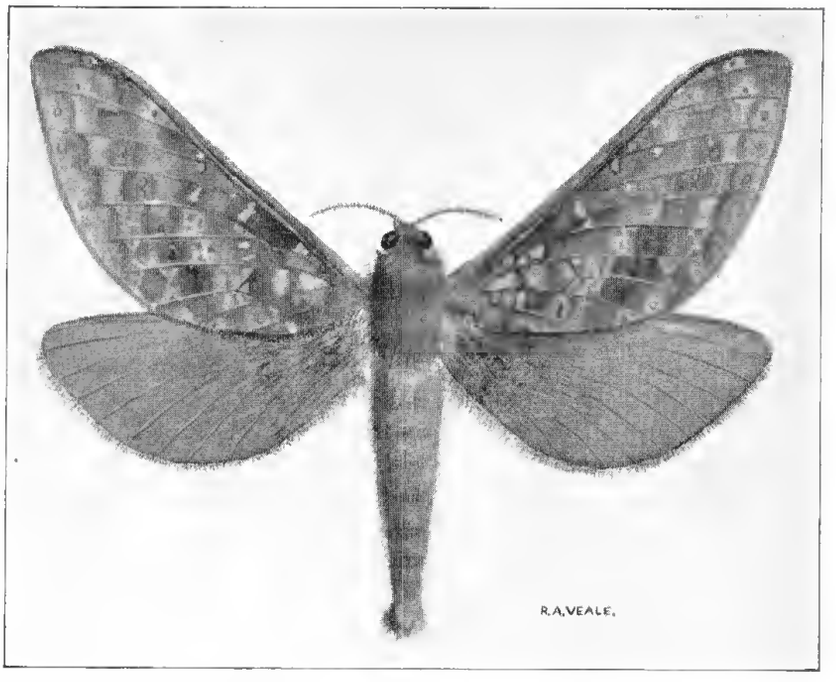


Fig. 78. *Oxycanus aurifex* sp. nov., type, a male, Dorrigo.

Loc. New South Wales: Dorrigo (R. J. Tillyard, ex Lower Collection, type, a male, I. 18864 in S. Aust. Mus.). 1 male.

The antennal pectinations are more developed than in *O. ballux*; it differs from *O. gelidus* in the form of the wings, in their snb-hyaline texture, and in the positions of the markings. The dull golden-yellow areas grouped about the base of the forewings should be distinctive.

OXYCANUS NAIAS sp. nov.

Fig. 30, 79.

♂ Antennae reddish-ochreous, short, pectinations short and stout, 1½; head and thorax reddish-brown, abdomen dark brown. Forewing uniformly reddish-brown with small brownish-black markings. Hindwings dark brown, concolorous with abdomen; apex, termen, and veins narrowly tinged with reddish-brown. Expanse 103 mm.

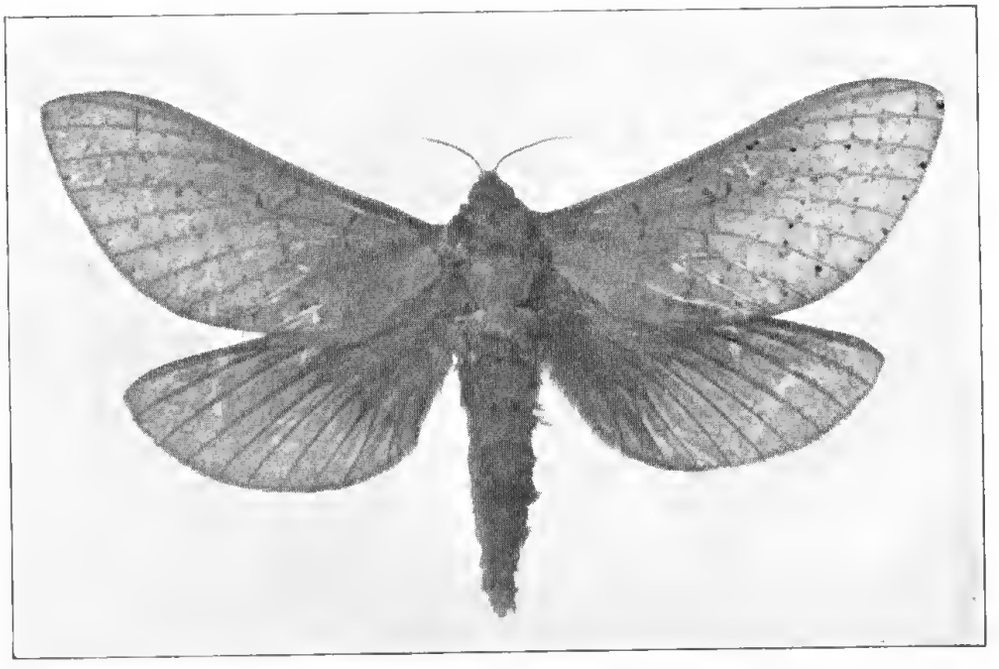


Fig. 79. *Oxycanus naias* sp. nov., type, a male, Wentworth Falls.

Loc. New South Wales: Wentworth Falls 4 (April 3, 1915, type, a male, I. 18865 in S. Aust. Mus.); Armidale 5; Newcastle; Dorrigo. Queensland: Gympie. 8 males.

The eight specimens examined are variable in the degree of development of the markings. A second example from Wentworth Falls has a discoidal dark brown suffusion on the forewings and two rather large white-centred black spots between radio-median vein and base.

Fig. 80. *Oxycanus gelidus* sp. nov., type, a male, Armidale.

OXYCANUS GELIDUS sp. nov.

Fig. 31, 80.

♂ Antennae ochreous, short, pectinations short, stout, 1-1½; head and thorax pale greyish-fawn, abdomen fawn. Forewings opaque, greyish-brown, due to a mixture of dark brown and creamy-grey scales; a semi-circular area parallel to termen warm brown, with series of paired darker spots and a broad darker brown marginal band; traces of a series of transverse creamy-white spots in outer portion of wing, and two larger ones, one at r-m vein and another half-way from there to base. Hindwings very pale chocolate-brown. Expanse 94 mm.

Loc. New South Wales: Armidale 5 (May, 1928, type, a male, I. 18866 in S. Aust. Mus.); Dorrigo; 3 males.

Allied to *O. ballux*, from which it differs in the broader, more closely-set wing scales, which give the wings a dull frosted appearance, and in the subfalcate apices to forewings.

OXYCANUS GOLDFINCHI sp. nov.

Fig. 32, 81.

♂ Antennae short, slender, weakly bipectinate, 1; head and thorax warm brown, abdomen dark chocolate-brown, apex with a paler greyish-brown tuft.

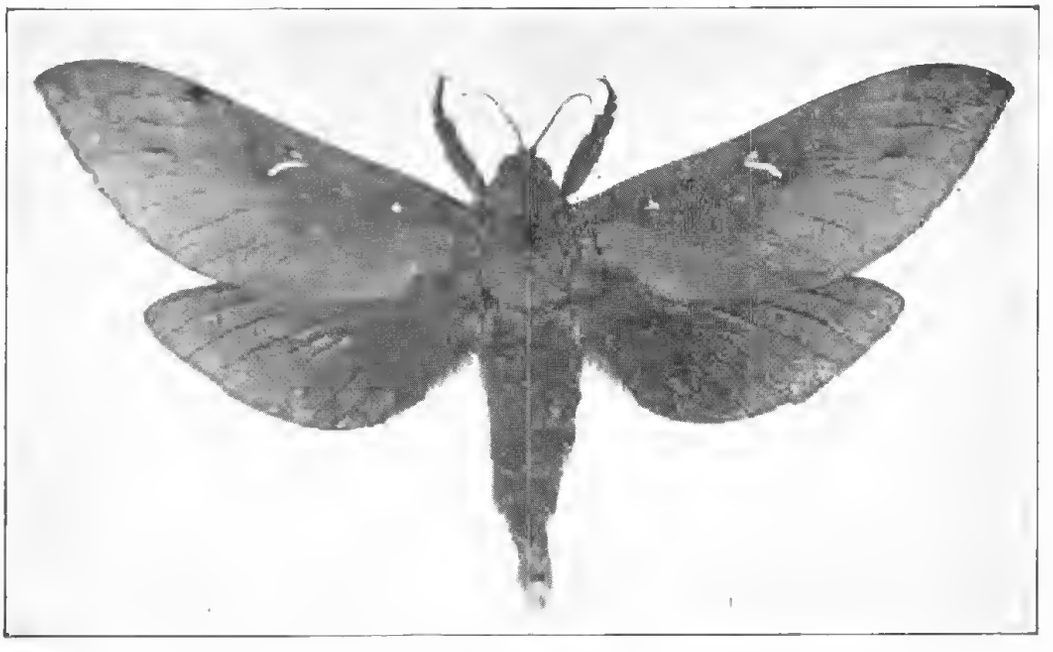


Fig. 81. *Oxycanus goldfinchi* sp. nov., type, a male, Wentworth Falls.

Forewings with apex subfalcate, ochreous-brown, with traces of dark brown suffusions at and near apex: a semi-lunate silvery-white mark at r-m vein, and another small circular one more than half-way to base. Hindwings dark chocolate-brown, slightly paler at base and near apex. Expanse 106 mm.

Loc. New South Wales: Wentworth Falls 5 (May 1, 1927, G. M. Goldfinch, type a male, I. 18867 in S. Aust. Mus.); Normanhurst 5; Killara 5. 4 males.

This species was taken at Wentworth Falls on the same date as an example of *O. naias*, from which it is distinct in the form of the antennae and in the form, colour, and markings of the wings. Examples vary from 86 to 118 mm. in expanse, and the colour of the forewings ranges from a warm brown to a dark chocolate-brown, with mottled markings; the new-moon-shaped white mark on the forewings is a rather constant feature. The slightly concave anterior portion of the margin to the tegmen is characteristic. This was not considered sufficiently marked to warrant its displacement from what otherwise appears to be its natural place in the key.

OXYCANUS ROSACEUS sp. nov.

Fig. 33, 82-83.

♂ Antennae ochreous, moderately long, pectinations short, 1½; head and thorax ochreous-brown, abdomen pink, apex with an ochreous tinge. Forewings ochreous-brown, basal part of costa darker; a bright ochreous suffusion in basal fourth, not extending to base; a series of obscure greyish-brown spots, the larger ones with a few silvery-white scales, forming ocelli; an angled greyish-brown suffusion from near apex to R_5. Hindwings ochreous-brown; veins and margins reddish-ochreous, base densely clothed with bright pink down. Expanse 75 mm.

♀ Antennae ochreous, short, pectinations almost obsolete, ½; head, thorax, anterior, and median legs, and apex of abdomen pale ochreous-brown; base of abdomen bright salmon-pink. Forewings subhyaline, uniformly pale ochreous-brown. Hindwings hyaline, greyish-brown, costal margin, base of wing, and veins pink; a large circular dark greyish-brown suffusion near base. Expanse 113 mm.

Loc. Victoria: Moe 4, 5 (April 29, 1922, C. G. L. Gooding, type, a male, and allotype female, I. 18868 in S. Aust. Mus.). New South Wales: Mt. Kosciusko (5,000 ft.) 3. 10 males, 3 females.

One female specimen taken on the same evening as the type pair is smaller, 97 mm. in expanse, and has the forewings marked as in the male, the hindwings, however, are the same as in the allotype. A third example resembles the first in size and in the absence of markings on the forewings.

The male genitalia have a well-marked median spine on the tegmmen and a moderate anterior (suspensorial) spine which is bent outwards at the apex, but it is neither so long nor so well hooked as in the next species, *O. hamatus*, from which it is otherwise quite distinct in colour and markings.

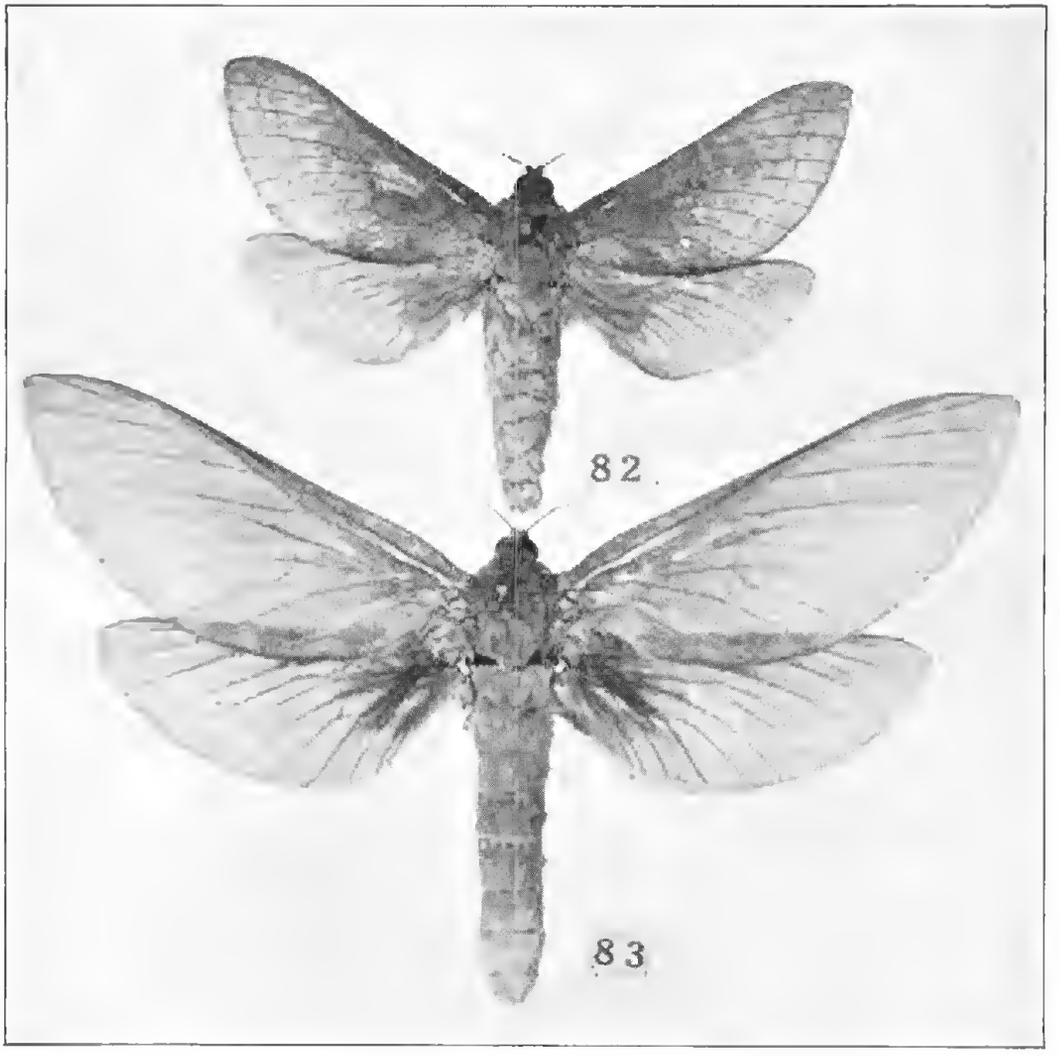


Fig. 82–83. *Oxycanus rosaceus* sp. nov. 82, type, a male, Moev 83, allotype female, Moe,

OXYCANUS HAMATUS sp. nov.

Fig. 34, 84-85.

♂ Antennae pale reddish-ochreous, pectinations slender, 2-2½, a short basal projection to each segment. Head and thorax dark reddish-ochreous, abdomen paler. Forewings bright reddish-ochreous, costal margin narrowly darker; an ocellus at r-m vein dull white ringed with black; traces of dark brown spots ar-

ranged in three transverse series; a larger obscure spot near inner margin, at one-half. Hindwings bright ochreous, basal hairs largely restricted to costal margin. Expanse 87 mm.

Loc. New South Wales: Jervis Bay 5, 6 (June 3, 1918, type, a male, I. 18869 in S. Aust. Mus.). 2 males.

A paratype example (fig. 85) in Dr. A. J. Turner's collection is smaller (75 mm. in expanse), and lacks the small obscure dark markings on the forewings; the ocellus is silvery-white, and there is a trace of another smaller one half-way

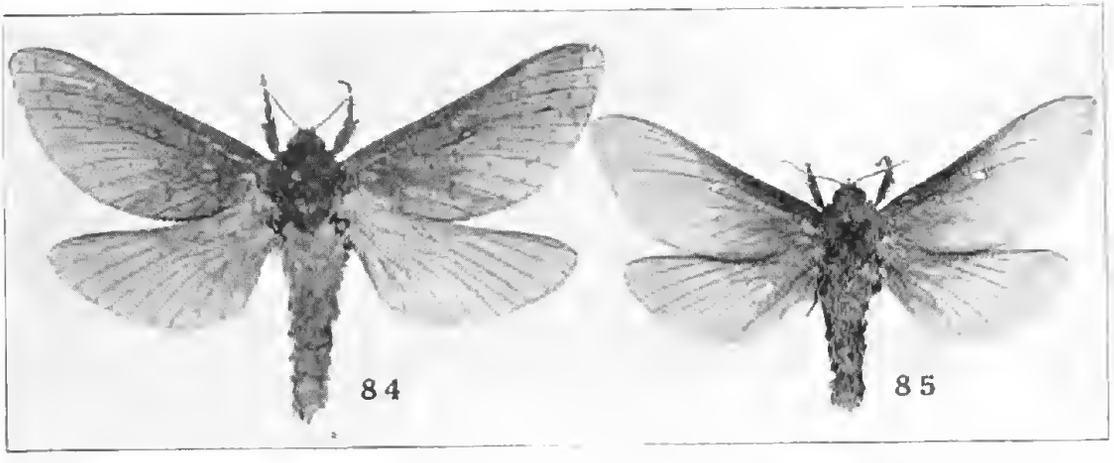


Fig. 84-85. *Oxycanus hamatus* sp. nov. 84, type, a male, Jervis Bay; 85, male, Jervis Bay.

to the base of the wing. The long hook-like suspensorial process is a characteristic of the genitalia of the species.

In genital characters this species is nearest to *O. stellans* and to *O. rosaceus*; from the former it differs in the prolongation of the anterior process of the tegmen. The suspensorial process is much longer than in *O. rosaceus*, and the apex is much more strongly recurved. From *O. rosaceus* it also differs markedly in the absence of the rose-coloured suffusion at base of wings; the rather uniform reddish-ochreous colour of the body and wings is distinctive.

OXYCANUS STELLANS sp. nov.

Fig. 35, 86-88.

♂ Antennae ochreous, pectinations short, 1-1½, stout, a well-marked pair of basal processes to each segment; head and thorax brown; abdomen rose-pink, densely clothed with pink down. Forewings greyish-brown, costal third with a bright reddish-ochreous suffusion, costa from base almost to one-half dark brown, discal region with many silvery-white spots, margined with dark brown, the

outer ones arranged in two irregular series parallel to termen; a series of small terminal silvery spots; ciliae reddish-ochreous. Hindwings pale reddish-ochreous, base rose-pink. Wings beneath with base rose-pink, concolorous with abdomen. Expanse 76 mm.

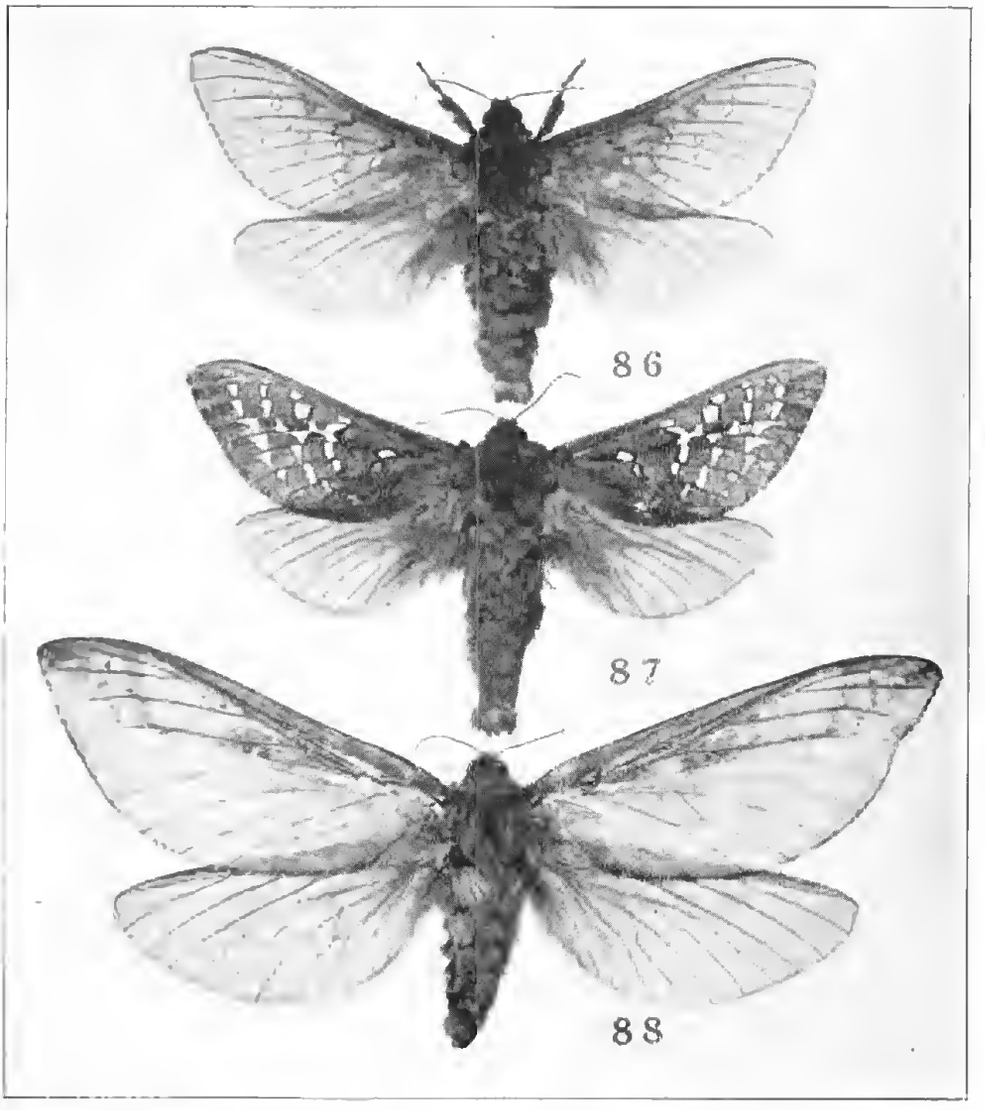


Fig. 86–88. *Oxycanus stellatus* sp. nov. 86, male, variety, Wandin; 87, type, a male, Cockatoo; 88, allotype female, Cockaloo.

♀ Antennae ochreous, pectinations almost obsolete, head and thorax pale fawn, abdomen ochreous. Forewings pale fawn, with traces of an obscure white fascia from base to about ⅓ termen; a few brown subcostal markings near apex. Hindwings pale ochreous, slightly brighter near base. Wings below bright ochreous, near termen of forewing obscurely darkened. Expanse 99 mm.

Loc. Victoria: Cockatoo 5 (May 5, 1924, G. F. Hill, type, a male, and allotype female, I. 18870 in S. Aust. Mus.); Wandin 5; Croydon 4; Beaconsfield 4. 11 males, 2 females.

This is one of the most pleasing of the new species of *Oxycanus*. Although the type pair do not resemble each other very closely the fact that Mr. Hill took them both on the same evening and at the same place seems sufficient justification for their association. The male genitalia bear a single posterior process on the tegumen, which does not appear to rise from a lobe or eminence, and is remote from the median spine; it is thus distinct from *O. sordidus*, from which it is also quite distinct in markings and general appearance. Some specimens have the silvery-white markings reduced in size and the forewings with an ochreous suffusion, as in the example shown in fig. 86.

OXYCANUS SPADIX sp. nov.

Fig. 36, 89.

♂ Antennae bright yellow, long, pectinations short, slender, set rather widely apart, 1; head and thorax reddish-brown, abdomen fawn. Forewings reddish-brown with costa, at base, and a rather broad subterminal area, dark brown with series of black spots surrounded by reddish-brown, a few of them with minute reddish-brown centres; a pair of small dull white spots, margined with dark brown, at r-m vein. Hindwings dark fawn, costa narrowly ochreous-brown; a small tuft of dull creamy-white hairs, tinged with pink, along posterior margin. Expanse 66 mm.

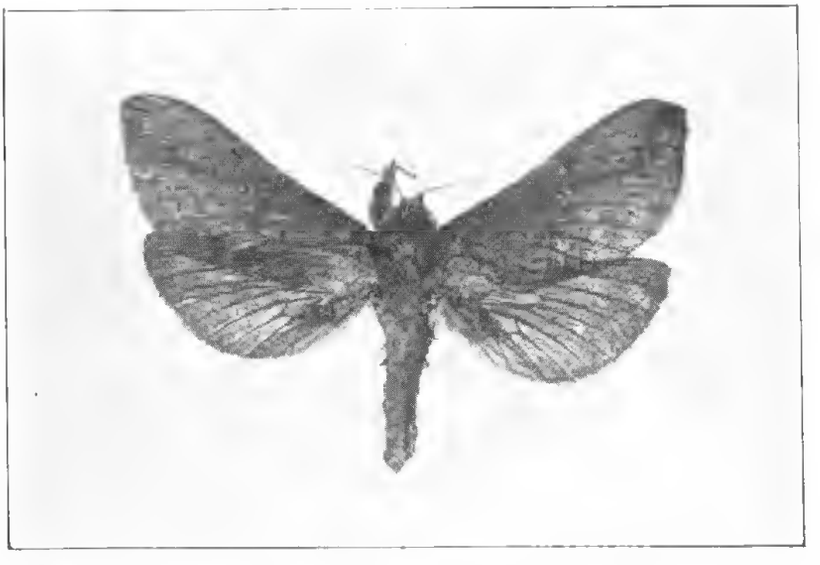


Fig. 89. *Oxycanus spadix* sp. nov., type, a male, Blackheath.

Loc. New South Wales: Blackheath 2, 12 (February 15th, 1922, E. W. Fergnson, type, a male, I. 18871 in S. Aust. Mus.); 2 males.

In the form of the tegumen this species shows a close relationship with *O. stellans*, from which it is easily distinguishable by the form of the wings and the entirely different scheme of markings and colour pattern. In the second example the paired white spots at r-m vein of the forewing are larger, and confluent.

OXYCANUS LOESUS sp. nov.

Fig. 37, 90-91.

♂ Antennae ochreous, moderately long, pectinations 2½-3; base of each segment with a well-marked protuberance bearing tufts of hairs: head, thorax, and legs reddish-ochreous, abdomen slightly paler, with a salmon-pink tinge. Fore-

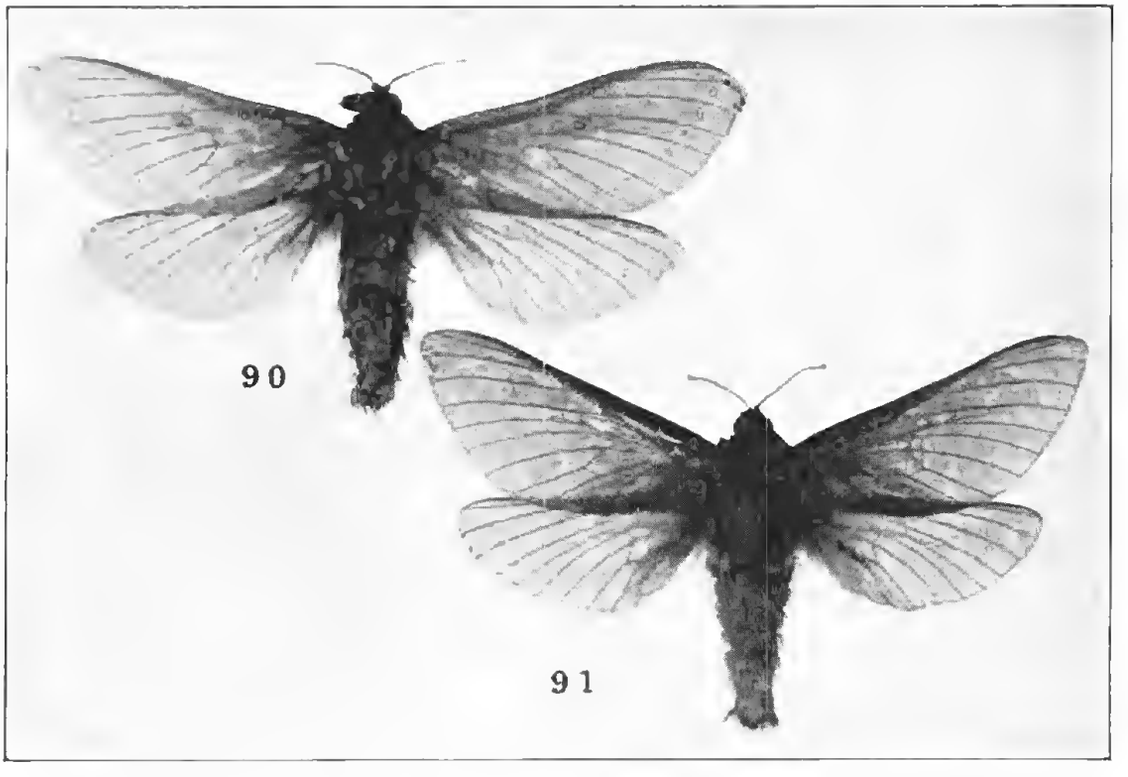


Fig. 90-91. *Oxycanus loesus* sp. nov. 90, type, a male, Manly; 91, male, Moe.

wings uniformly bright reddish-ochreous; a subterminal series of small greyish-brown spots from near apex to near inner margin, the subapical ones with yellow centres; a pair of yellow-centred spots at r-m vein and two others half-way from there to apex. Hindwings pale reddish-ochreous, at base salmon-pink; ciliae reddish-ochreous. Expanse 80 mm.

Loc. New South Wales: Manly 3 (March 28, 1911, type, a male, I. 18872 in S. Aust. Mus.); Killara 5; Gordon 4; Sydney; Woodford 5; Hornsby 5. Victoria; Moe 5; Ararat; Croydon 5. 20 males.

The second example figured (fig. 91) is from Moe, and was taken in April. It has the costa dark brown at base and the subterminal series of spots are absent. Two examples from New South Wales (Hornsby and Killara) have the hindwings suffused with dark grey, except at base, and another aberrant example from Sydney has the forewing pattern repeated on the hindwing. In the structure of the tegumen this species is nearest to *O. stellatus*, from which it differs in the short distance separating the median and posterior spines.

OXYCANUS OCCIDENTALIS sp. nov.

Fig. 38, 92-93.

♂ Antennae yellow, pectinations 3, slender, a pair of small elevations bearing hairs near base of each segment; head and thorax greyish-brown, abdomen slightly paler. Forewings greyish-brown; a series of well-marked silvery-white

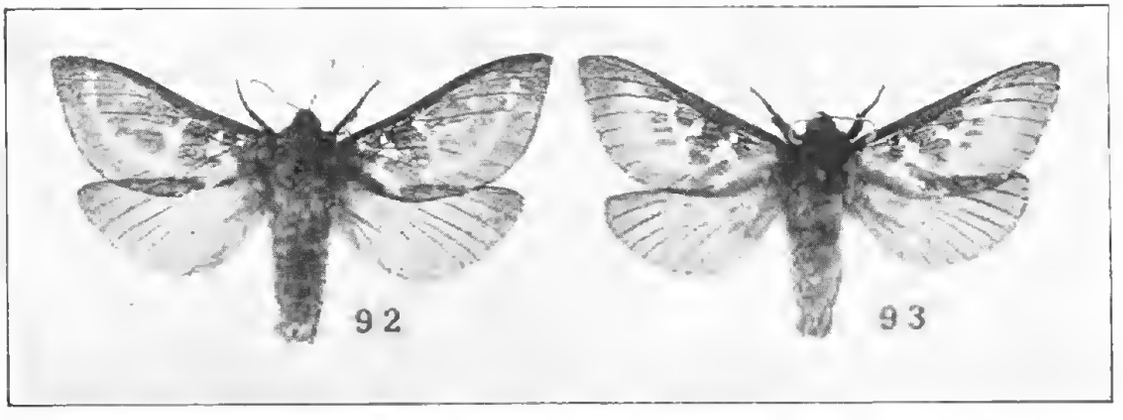


Fig. 92–93. *Oxycanus occidentalis* sp. nov. 92, type, a male, Denmark, W. Aust.; 93, male, Denmark, W. Aust.

marks in the discal region and a series of obscure yellowish-white marks along termen. Hindwings greyish-brown, base moderately clothed with hairs which have a slightly more ochreous tinge. Expanse 61 mm.

Loc. Western Australia: Denmark 4 (April 21, 1926, W. B. Barnard, type, a male, I. 18873 in S. Aust. Mus.); Collie 5, 7; Lennox 5; Cunderdin; Mundaring. 11 males.

The female of this species has not yet been discovered. It is just possible that the example associated, in this paper, with the next species may actually belong to this one.

The males are rather constantly marked, for the genus; in a few specimens the silvery-white markings are enlarged. The male genitalia have the tegumen armed with a large median and four posterior spines. The form of the tegumen with its four large posterior spines marks this species off from *O. niphadias* and *O. goodingi*, to which it bears a marked superficial resemblance.

There is a single broken and undescribed specimen of a species from Pinnaroo, S. Australia, in our collection, which possesses a tegumen somewhat of the type present in this species.

OXYCANUS POETICUS sp. nov.

Fig. 39, 94-96.

♂ Antennae reddish-ochreous, short, slender, pectinations reduced ($\frac{1}{2}$-$\frac{3}{4}$), head, thorax, and anterior and median legs, greyish-fawn; apex of abdomen

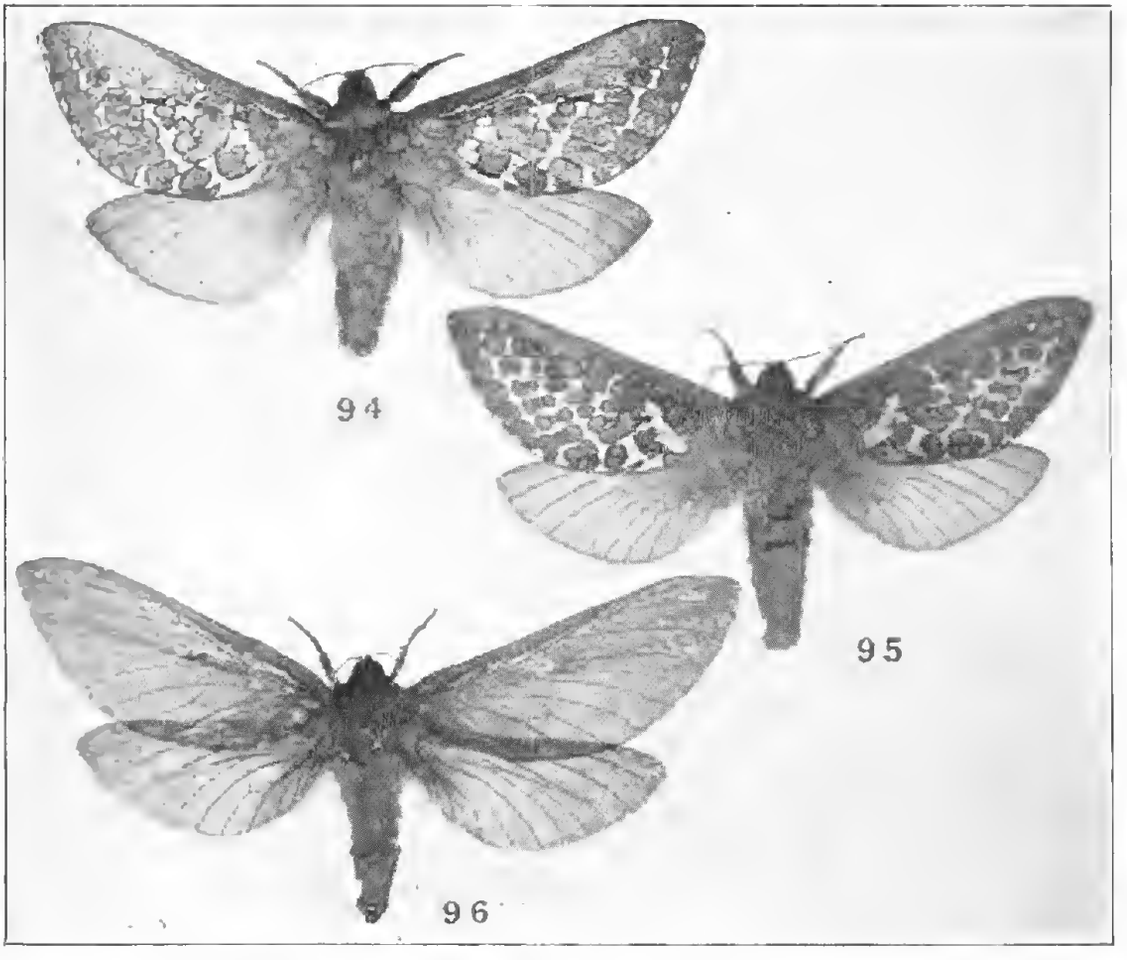


Fig. 94–96. *Oxycanus poeticus* sp. nov. 94, male, Denmark, W. Aust.; 95, type, a male, Denmark, W. Aust.; 96, allotype female, Denmark, W. Aust.

paler; base of abdomen salmon-pink. Forewings brown, costal margin from base to one-half darker; an ochreous subcostal suffusion from one-half to near apex; discal region brownish-ochreous; a large series of silvery-fawn irregular markings, outlined with dark brown; ciliae pale brown. Hindwings pale reddish-ochreous, obscurely pale brown near apex, veins narrowly and base broadly bright salmon-pink; ciliae concolorous. Expanse 82 mm.

♀ Antennae ochreous, very short, pectinations obsolete; head, thorax, and legs greyish-fawn, apex of abdomen a little paler, base of abdomen pale brownish-ochreous. Forewings hyaline, pale fawn with obscure brown suffusions visible at certain angles only; a dull white spot at r-m vein obscurely margined with brown. Hindwings hyaline, pale fawn. Expanse 92 mm.

Loc. Western Australia: Denmark 4 (April 21, 1926, W. B. Barnard, type, a male, and allotype female, April 18, 1926, I. 18874 in S. Aust. Mus.). 2 males, 1 female.

The paratype male (fig. 94) is in the collection of Mr. W. B. Barnard. This species was taken on the same day and place as the next one. This led at first to the conclusion that they were the same, but a more critical examination of the male genitalia and a consideration of the outstanding differences in the wing pattern and colour has yielded convincing evidence of their distinctness. The wings in this species are somewhat more ample, and the apex of forewing not quite so acute. It has a superficial resemblance to the Eastern Australian *O. stellans*, from which it differs in the positions of the markings, in the absence of the rose-pink tinge to hindwings and abdomen, and in the form of the tegumen.

OXYCANUS PROMISCUUS sp. nov.

Fig. 40, 97-98.

♂ Antennae bright ochreous, pectinations short (¾-1); head, thorax, abdomen, and legs bright reddish-ochreous. Forewings bright reddish-ochreous, costal margin slightly darker near base: a marked silvery-white, black-margined spot at r-m vein; traces of two subterminal series of brownish-black spots, three with white centres; a terminal series of obscure dark brown semi-lunate marks; two other dark spots obscurely centred with white scales. Hindwings ochreous, three obscure dark spots near apex. Expanse 76 mm.

Loc. Western Australia: Denmark 4 (April 21, 1926, W. B. Barnard, type, a male, I. 18775 in S. Aust. Mus.). 2 males.

It is possible that the female associated with *O. poecicus* may belong either to this species or to *O. occidentalis*. The colour of the legs, head, and thorax, and

obscure traces of marks visible in some angles of light, do not suggest this species. The paratype male (fig. 97) is in the collection of Mr. W. B. Barnard.

The tegumen of the male genitalia possesses an external marginal spine which is absent in *O. poetieus:* the markings of the forewings are also very differ-

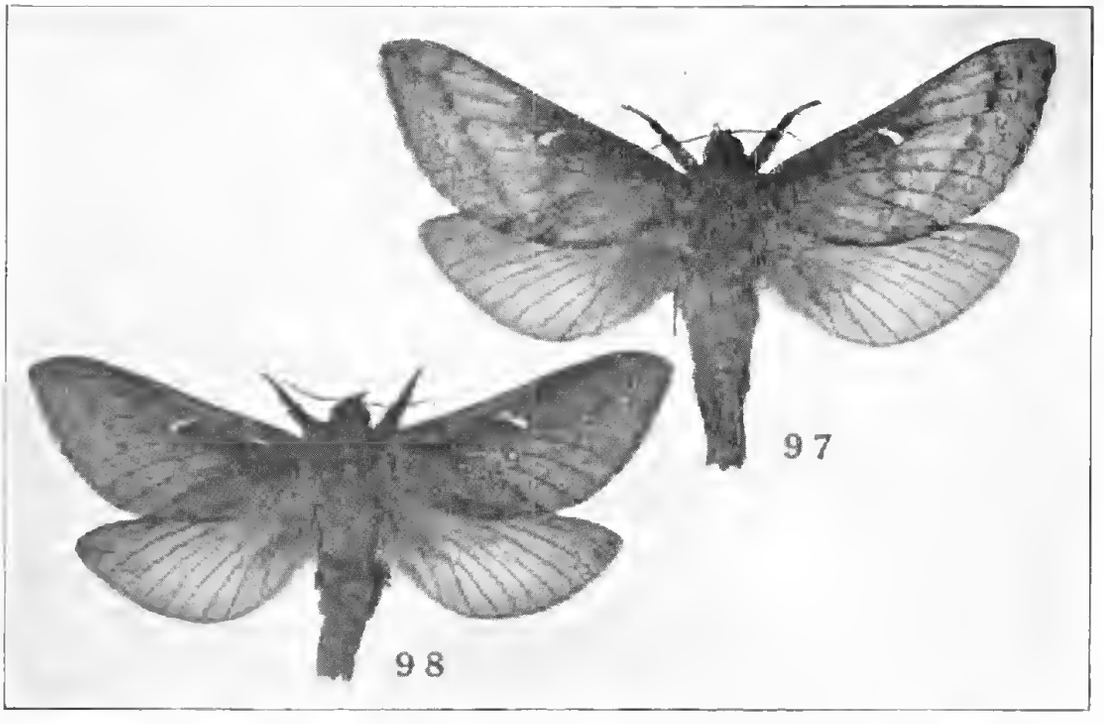


Fig. 97–98. *Oxycanus promiscuus* sp. nov. 97, male. Denmark, W. Aust.; 98, type, ♂ male. Denmark, W. Aust.

ent to those of that species. It is remarkable that three species, so distinct from each other, should fly at Denmark during the same period, and probably indicates that in the districts of South Western Australia, with heavy rainfall, we have a rich Hepialid province, the fauna of which has only just been touched upon.

OXYCANUS SORDIDUS (Herrich-Schaeffer).

Fig. 41, 99-101.

Epiolus sordidus Herrich-Schaeffer. Lep. Exot., 1853, pl. xi. f. 49 (male).
Abantiades sordidus Herrich-Schaeffer, *l.c.* 1855. p. 5.
Oxycanus rufescens Walker. List Lep. Ins. Brit. Mus., vii, 1856, p. 1575 (male).
Pielus ? sordidus Walker, *l.c.* vii. 1856. p. 1578.
Pielus incurius Walker, *l.c.* xxxii, 1865. p. 599 (female).
Porina rufescens Meyrick, Proc. Linn. Soc. N.S. Wales. iv (2). 1889, p. 1122.
nec *Porina rufescens* Pfitzner and Gaede, Seitz Macrolep., x. 1933. p. 839, pl. 76e.

♂ Antennae yellow, pectinations moderate, 2½; head and thorax dark brown, abdomen pale red, except at apex. Forewings brown, with costa narrowly darker from base to ½; traces of darker spots surrounded by diffuse areas of light brown scales forming two transverse series; obscure traces of a dark spot at r-m vein, more pronounced in other examples. Hindwings dull brown, costa and veins narrowly reddish-ochreous, base densely clothed with red down. Expense 74 mm.

♀ Antennae yellow, obsoletely bipectinate; head, thorax, and apex of abdo-

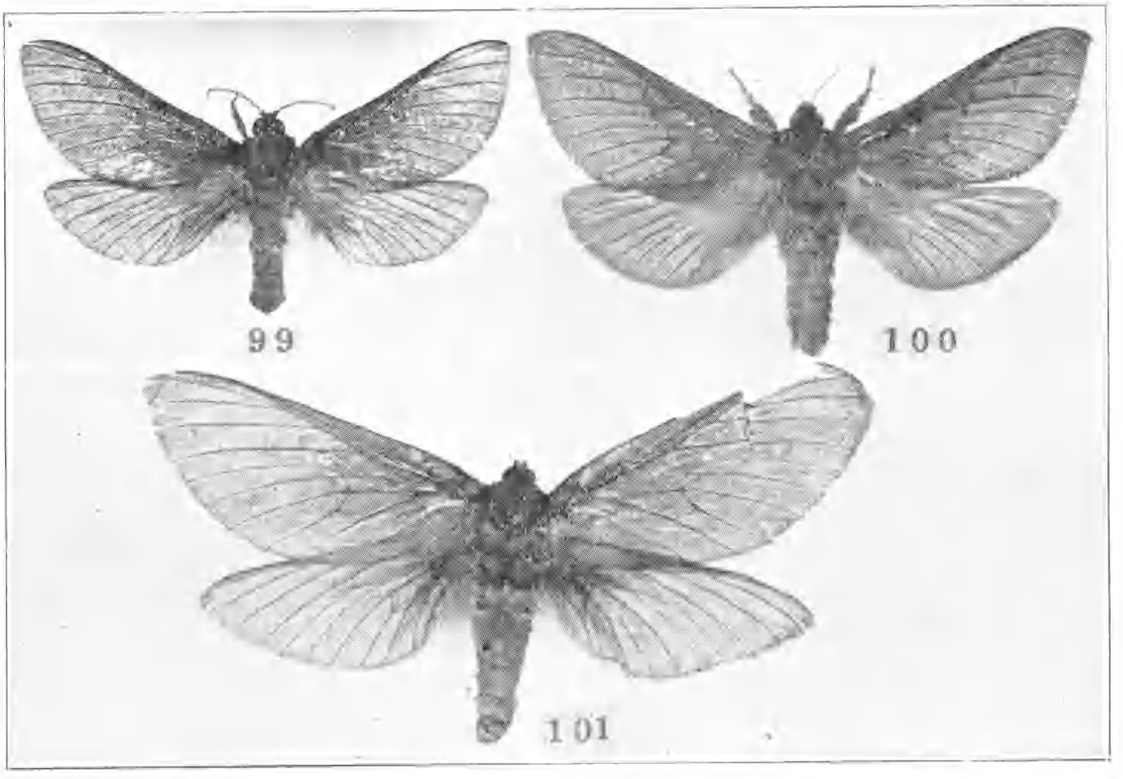


Fig. 99–101. *Oxycanus sordidus* (Herrich-Schaeffer). 99, male, Tasmania (type of *rufescens* Walker, in British Museum Collection); 100, novotype, a male, Snug River; 101, female Tasmania (type of *inornatus* Walker, in British Museum Collection).

men pale fawn, base of abdomen with pink-tinged hairs. Forewings subhyaline, pale yellowish-fawn, with traces of two or more brown spots in outer portion of wing, between veins R_3 and R_5. Hindwings dull fawn, with base sparsely clothed with pink-tinged hairs. Expanse 101 mm.

Loc. Tasmania: Snug River 5 (May 1, 1927, novotype, a male, I. 18876 in S. Aust. Mus.); Eagle Hawk Neck 4; Hobart; Launceston. Victoria: Gisborne 5; Moe 4; Wandin; Beaconsfield 4; Belgrave; Croydon 5. New South Wales: Asquith 3; Wentworth Falls 4; Woodford 5; Hornsby 5; Sydney 5; Manly 6. 23 males, 1 female.

It is difficult to avoid the conclusion that Herrich-Schaeffer's species is the same as *O. rufescens* Walker from Tasmania. The colours and markings on the figure in his plate agree rather closely with some examples of it, and the venation, as drawn on the plate, is definitely that of an *Oxycanus*. The type is apparently no longer in existence; the specimen described above, from Tasmania, has therefore been selected as novotype, and Snug River is nominated as the type locality. *O. rufescens* Walker is a direct synonym. Walker's specimen which has been figured (fig. 99) was taken by Morton Allport, who collected chiefly near Hobart.

The hindwings are usually dull brown, with pink or pale red at the base. In mainland examples the ground colour of the wings is lighter and the forewings bear traces of small, white-centred spots and marks. Some specimens from New South Wales have these markings well developed, and the ground colour tends to become reddish-ochreous. The tegumen of the male genitalia remains constant and serves to distinguish such pale-coloured specimens from those of *O. locsus*, which may resemble them.

The only female specimen in our series has been described; it is from Victoria (1. 18877 in S. Aust. Mus.), and agrees closely with Walker's *Pielus inarius*, which is the female of *O. sordidus*.

OXYCANUS NUPTIALIS sp. nov.

Fig. 44, 102-103.

♂ Antennae ochreous, short, pectinations weak (1½-2), head and thorax dull greyish-brown, abdomen with apical half pale brown, base salmon-pink, and densely clothed. Forewings rather broad, hyaline, pale brownish-fawn with darker greyish-brown markings; costa greyish-brown, a white fascia from base almost to termen, at one half; three transverse series of conjoined spots and traces of a terminal series of dull brown spots between the veins. Hindwings hyaline, dull greyish-brown, base tinged with salmon-pink; ciliae greyish-brown. Expanse 61 mm.

♀ Antennae reddish-ochreous, very short, pectinations 1; head, thorax, and legs dull fawn, abdomen slightly paler, base of abdomen with a slightly ochreous tinge. Forewings hyaline, pale fawn with traces of darker grey markings, some with white centres, as in male; in addition five large silvery-white spots margined with grey; a well-marked series of small brown terminal spots between the veins, from apex to inner margin; ciliae pale brown. Hindwings hyaline, pale fawn; ciliae pale brown. Expanse 68 mm.

Loc. New South Wales: Mount Kosciusko, 5,000-6,000 ft., 3 (March, 1889, R. Helms, type, a male and allotype female, I. 18878 in S. Aust. Mus.). 1 male, 1 female.

The male was taken at 5,000 feet, and the female a 1,000 feet higher up on Mt. Kosciusko. The male genitalia have not been dissected from the type specimen, but sufficient may be seen, without removal, to place it satisfactorily in the

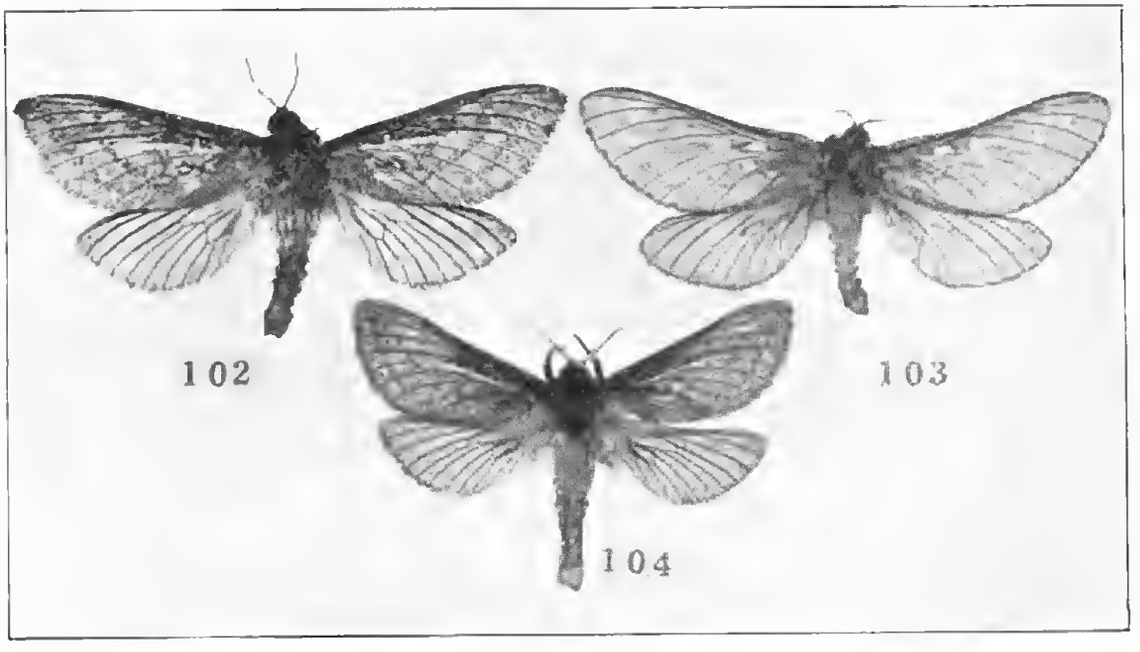


Fig. 102–104. 102–103 *Oxycanus nuptialis* sp. nov. 102, type, a male, Mt. Kosciusko, 5,000 ft.; 103, allotype female, Mt. Kosciusko, 6,000 ft. 104. *Oxycanus incanus* sp. nov., type, a male, Jervis Bay.

key. It is a rather distinctive species characterized by its hyaline, and rather sparsely scaled wings. It is related to the next species, from which it may be distinguished by its somewhat broader, hyaline wings and less conspicuously pectinated antennae.

OXYCANUS INCANUS sp. nov.

Fig. 42, 104.

♂ Antennae yellow, long, pectinations 3; head and thorax dark brown, abdomen at apex pale brown, base pale pink. Forewings pale brown, costa at base darker, with two transverse series of small dark brown spots, some with traces of greyish-white centres; a few other small spots, a narrow white, longitudinal fascia from base to r-m vein. Hindwings subhyaline, rather sparsely clothed with narrow, brown, hair-like scales, base narrowly clothed with pink

pubescence. Wings beneath dull brown with base narrowly rose-pink. Expanse 55 mm.

Loc. New South Wales: Jervis Bay (June 3, 1918, type, a male, I. 18879 in S. Aust. Mus.). 1 male.

This species resembles *O. nuptialis* in colour and markings, and in the general form of the genitalia, but it differs in the shape and texture of the wings, and in the antennae, which have pectinations almost twice as long as in that species.

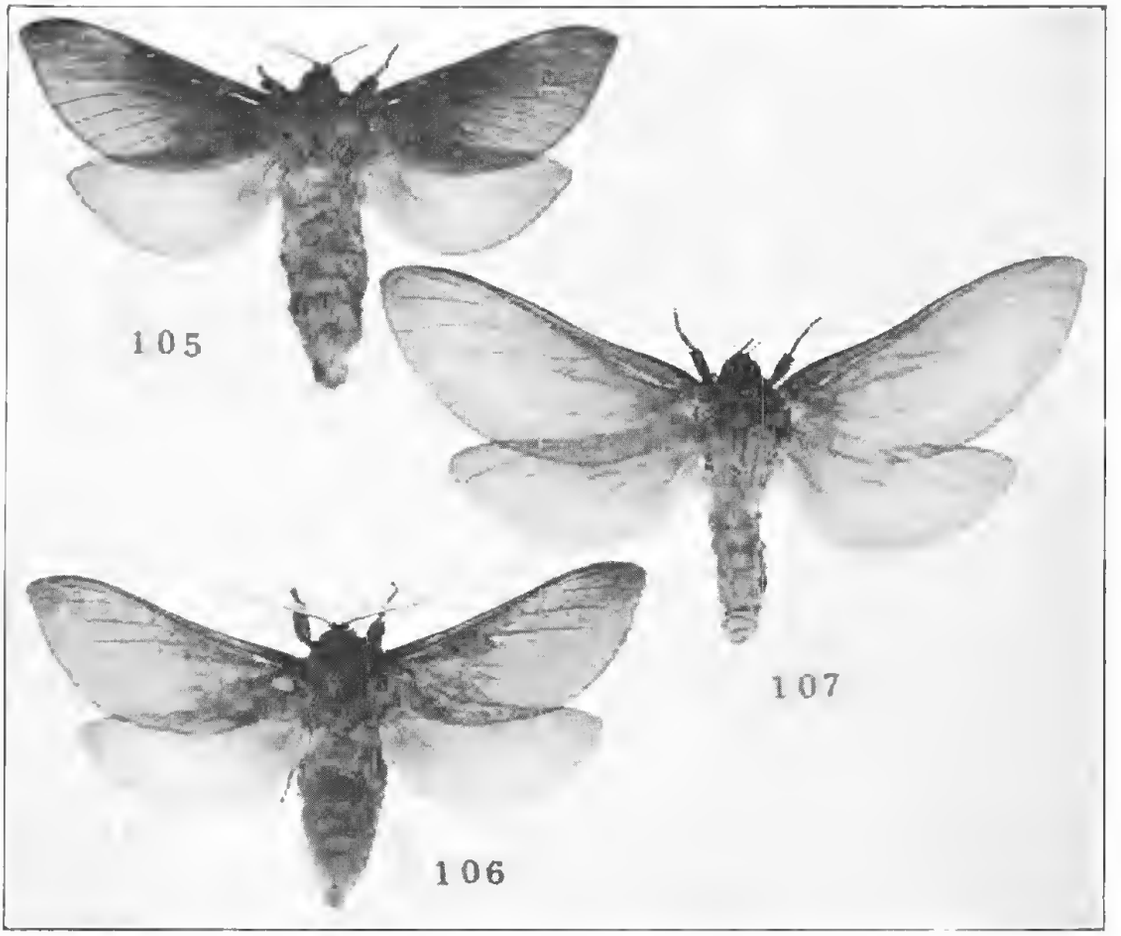


Fig. 105–107. *Oxycanus barnardi* sp. nov. 105, male, Toowoomba; 106, type, a male, Toowoomba; 107, allotype female, Toowoomba.

OXYCANUS BARNARDI sp. nov.

Fig. 43. 105-107.

♂ Antennae dull yellow, long, pectinations ample, 5; head and thorax greyish-fawn, abdomen yellowish-fawn. Forewings greyish-fawn with faint pale yellow rings around dark fawn spots. Hindwings pale yellowish-fawn, apex slightly darker; base densely clothed with yellowish-fawn hairs. Expanse 74 mm.

♀ Antennae pale yellow, moderate, pectinations 1-1½; head, thorax, and abdomen pale greyish-fawn, abdomen at base slightly yellowish-tinged. Forewings pale greyish-fawn with faint traces of markings, as in male. Hindwings pale greyish-fawn, at base clothed with paler hairs having a yellow tinge. Expanse 89 mm.

Loc. Queensland: Toowoomba 5, 6 (June 4, 1927, W. B. Barnard, type, a male, and allotype female, June 6, 1927, I. 18880 in S. Aust. Mus.); Blackbutt: 8 males, 2 females.

Some male examples have the markings on forewings obsolete, except for a faint yellowish tinge along veins R_1 and R_2 near apex; in such specimens the forewings may be dull greyish-brown, darker at base than at apex (fig. 105). The margin of tegumen of the male genitalia is strongly produced, medially, in a rounded lobe, which is not armed with spines. The species is not closely related to any other; in wing pattern it is somewhat allied to the paler examples of *O. silvanus*, in which, however, the tegumen is of entirely different character.

OXYCANUS NIPHADIAS (Meyrick).

Fig. 45, 108-109.

Porina niphadias Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1122.
Porina niphadias Quail, Trans. Ent. Soc. Lond., 1900, p. 421.

♂ Antennae pale reddish-ochreous, short, pectinations long, slender, 5; head and thorax dark brown, abdomen pale fawn. Forewings dull greyish-brown with a slight reddish-ochreous tinge near apex of costa; a series of dull white spots arranged in a triangle on wing and traces of a single longitudinal one parallel to 1A. Hindwings greyish-brown, at base paler and yellowish-tinged. Expanse 58 mm.

♀ Antennae yellow, short, pectinations short, 1; head, thorax, and abdomen pale fawn. Forewings subhyaline: uniformly pale fawn, a few white scales at r-m vein. Hindwings subhyaline, pale fawn, at base yellowish-tinged, and clothed with dense fine hairs. Expanse 78 mm.

Loc. South Australia: Balhannah 5; Blackwood 4, 5 (allotype female, May, E. Ashby, I. 18882 in S. Aust. Mus.). 28 males, 3 females.

The pair figured and described are from Blackwood, in May. This species which, so far as known, is confined to the Mount Lofty Range in South Australia, has been wrongly attributed by Quail to Patagonia!

Meyrick's type was from Balhannah, not "Mt. Lofty", as indicated in the original description. It was taken by Mr. E. Guest, together with another ex-

ample which is now in the South Australian Museum (I. 18883). Guest's notebook yields the following remarks:

"May 7. 1881 . . . . two specimens . . . . taken by me at Balhannah. It is

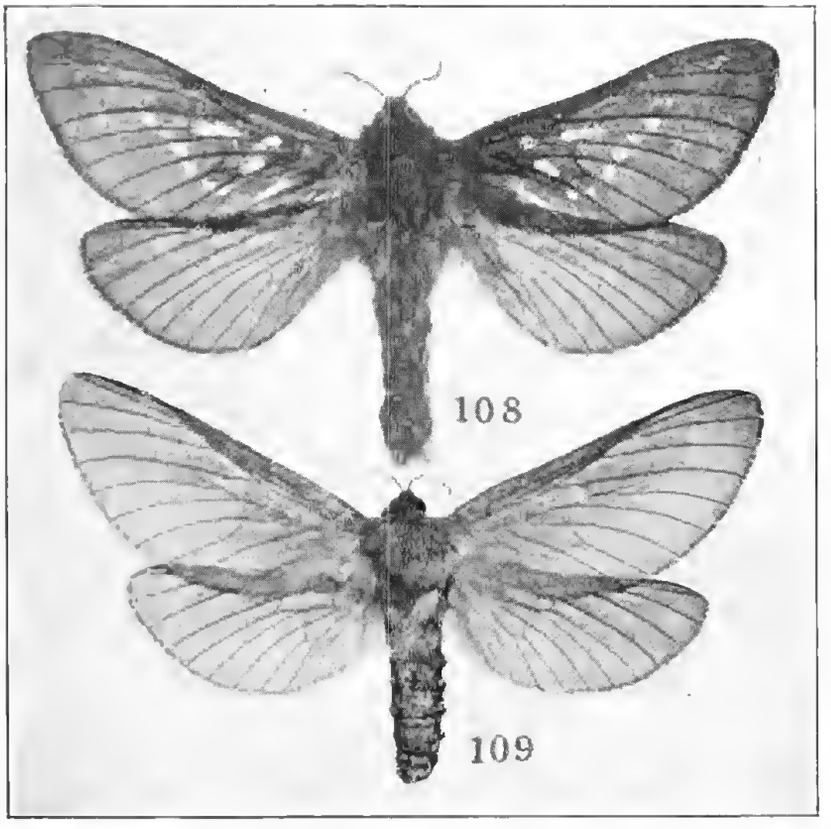


Fig. 108–109. *Oxycanus niphadias* (Meyrick). 108, male, Blackwood; 109, allotype female, Blackwood.

either rare or of retired habits, and I could never find the larva. It is a late autumn insect, being on the wing in April and May."

Mr. E. Ashby captures a few specimens each year. They come to lights on one cold wet evening in late April or early May. The females are seldom seen.

OXYCANUS GOODINGI sp. nov.

Fig. 46, 110-111.

♂ Antennae bright yellow, long, pectinations slender, moderately long, 3; base of each segment with a pair of conspicuous tufts; head and thorax dark greyish-brown, abdomen paler, with apex light greyish-brown. Forewings grey-

ish-brown, costa narrowly darker from base to ⅔rds; two transverse series of spots in outer half of wing, formed of sparsely set silvery-white scales; a conspicuous sub-rectangular sub-marginal area of white scales along hind margin; and several other white spots between r-m vein and base. Hindwings rather uniformly greyish-brown. Expanse 70 mm.

♀ Antennae bright yellow, short, shortly bipectinate, ½; head, thorax, and apex of abdomen pale fawn, base of abdomen lighter. Forewings hyaline, rather uniformly pale fawn, without markings; costa narrowly dark fawn. Hindwings hyaline, pale fawn, base sparsely clothed with paler fawn hairs. Expanse 80 mm.

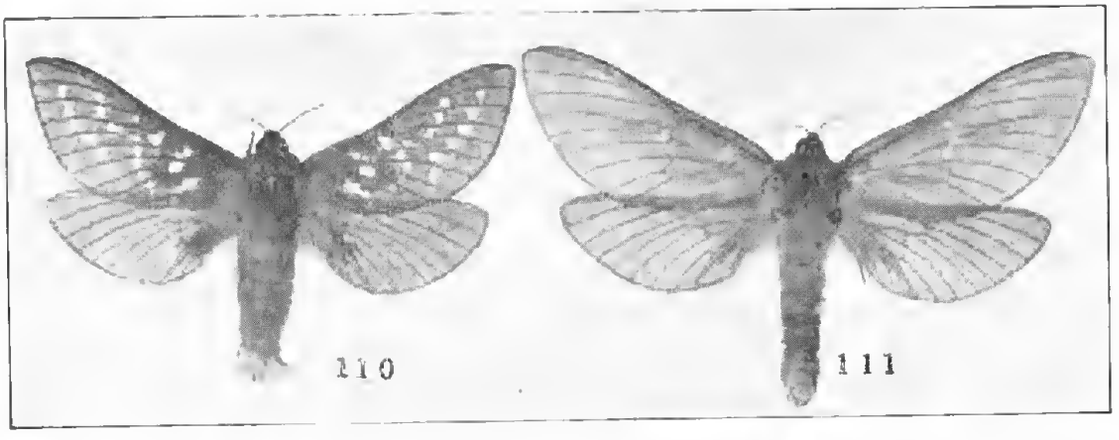


Fig. 110–111. *Oxycanus goodingi* sp. nov., 110, type, a male, Moe; 111, allotype female, Moe.

Loc. Victoria: Moe 4, 5 (April 29, 1922, C. G. L. Gooding; type, a male, and allotype female, I. 18884 in S. Aust. Mus.); Sale. 33 males, 27 females.

A large series, including the type pair, were taken at Moe by Mr. Gooding, on four nights, between April 20th and May 1st, 1922; it is otherwise exceedingly rare. The tegumen of the male (fig. 46) is very strongly developed, with a large median rounded process bearing small serrations upon its posterior margin; it is thus very distinct from *O. occidentalis* and *O. niphadias*, the only two species with which it might otherwise be confused.

OXYCANUS SIRPUS sp. nov.

Fig. 47, 112-113.

? Porina rufescens Pfitzner and Gaede, Seitz Macrolep., x, 1933, p. 839. fig. 76e (part).

♂ Antennae pale reddish-ochreous, long, pectinations short, stout, 1; head and thorax light brown, abdomen salmon-pink, apex tinged with reddish-ochre-

ous. Forewings pale reddish-ochreous, with greyish-brown markings and suffusions. Hindwings with apical half pale reddish-ochreous; base clothed with dense salmon-pink hairs. Expanse 96 mm.

♀ Antennae pale reddish-ochreous, relatively long, slender, pectinations obsolete; head and thorax pale fawn; abdomen creamy-yellow, at base pale salmon-

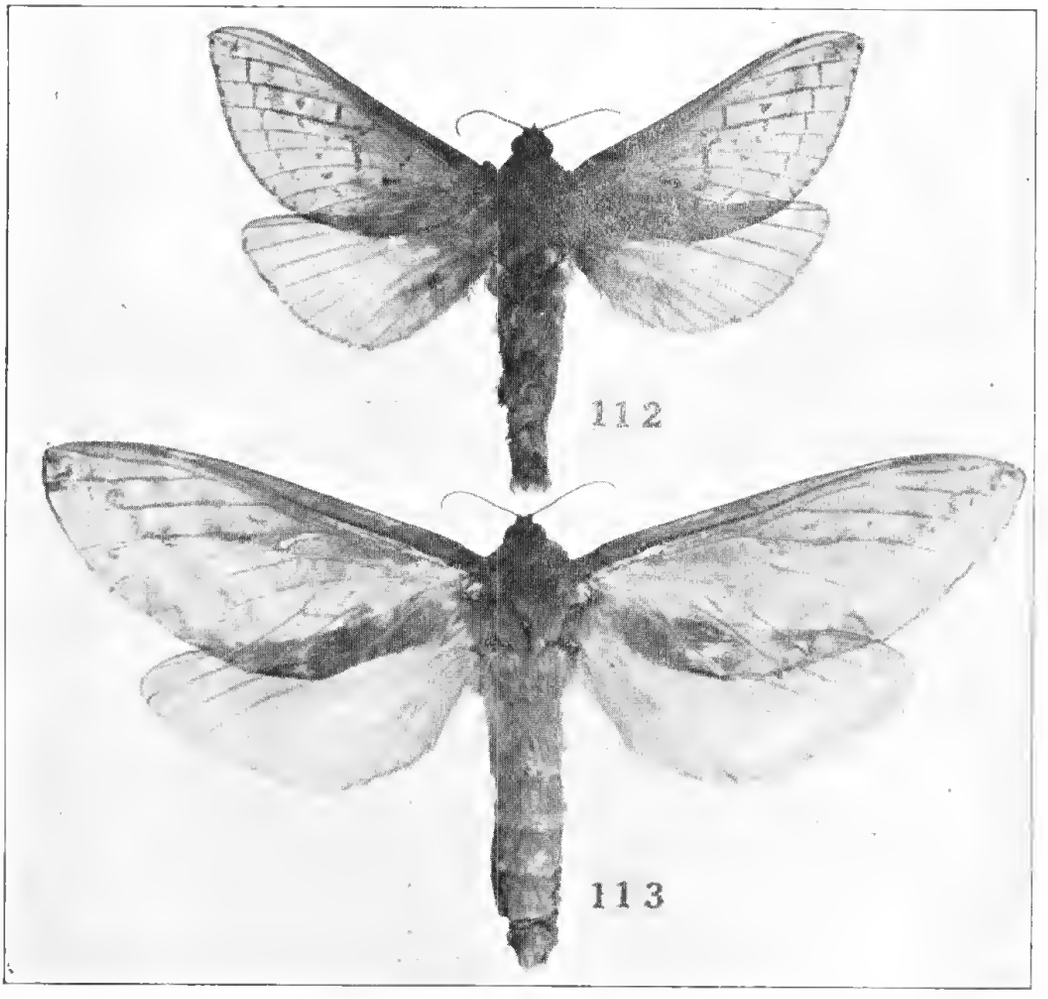


Fig. 112-113. *Oxycanus sirpus* sp. nov. 112, type, a male, Ferntree Gully; 113, allotype female, Ferntree Gully.

pink. Forewings hyaline, pale fawn, with large dull white suffusions surrounding pale greyish-brown marks, hindmargin broadly suffused with fawn. Hindwings subhyaline, rather uniformly pale creamy-yellow. Expanse 110 mm.

Loc. Victoria: Ferntree Gully 4, 5 (May 2, 1921, type, a male, and allotype female, I. 18885 in S. Aust. Mus.); Croydon 5; Beaconsfield 4; Moe 4; 7 males, 2 females.

This species is not closely allied to any of its congeners. It is variable in size; the smallest male examined is 62 mm. across the wings. The laterally expanded semi-circular margins to the tegumen of the male are quite distinctive, giving the appearance of a large serrated disc when viewed from beneath. In wing markings the species is nearest to some examples of *O. waterhousei*. Several examples have traces of two large white subcostal spots, as in that species. The example figured by Pfitzner and Gaede as *Porina rufescens* probably belongs to this species, but is smaller than the type.

OXYCANUS SUBVARIUS (Walker).

Fig. 48, 114-118.

Elhamma subvaria Walker, List Lep. Ins. Brit. Mus., vii, 1856, p. 1562.
Oxycanus subvarius Walker, *l.c.* p. 1575.
Porina subvaria Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1123.

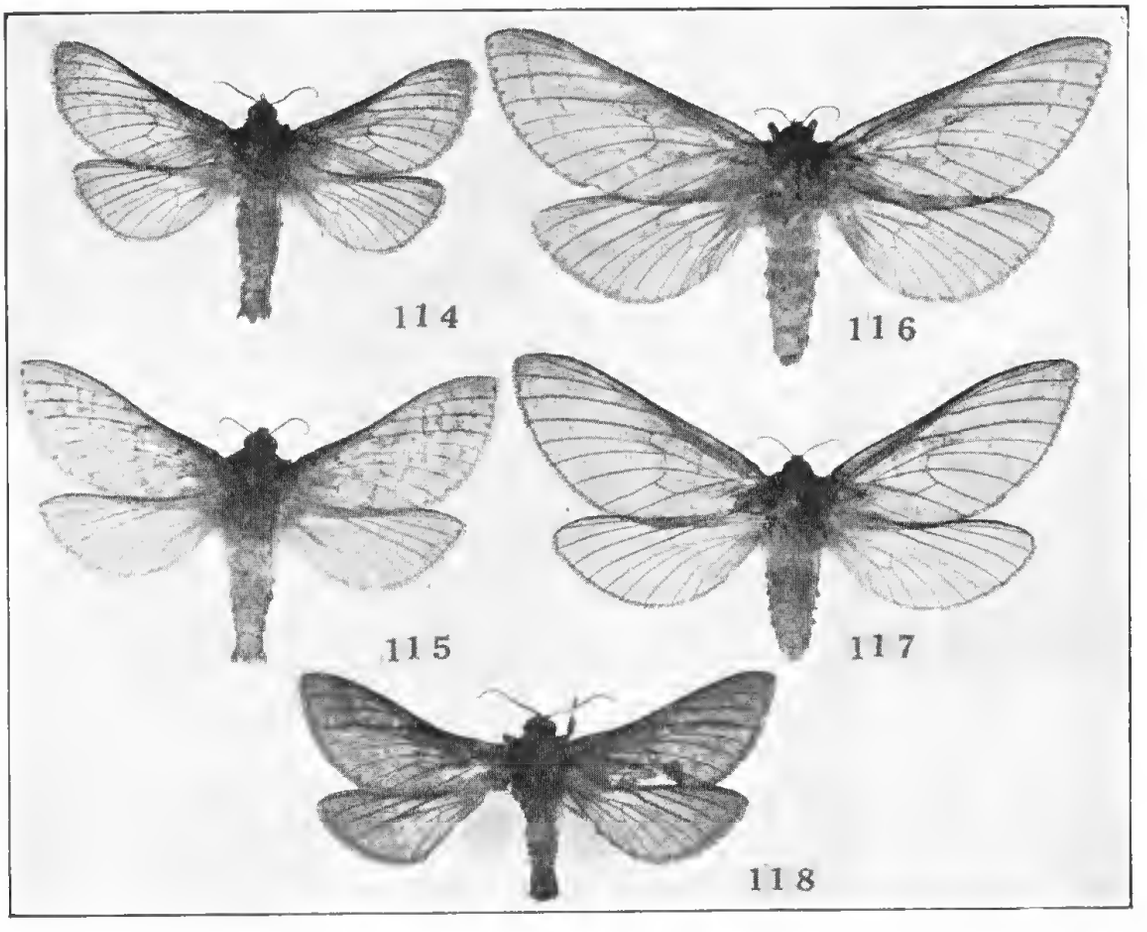


Fig. 114–118. *Oxycanus subvarius* (Walker). 114–115, males, Moe; 116–117, females. Moe; 118, type, a male, Tasmania (in British Museum Collection).

♂ Antennae reddish-ochreous, short, pectinations short, 1¼-1½; head and thorax dark brown, abdomen pale ochreous with a tinge of salmon-pink, at apex darkening to pale fawn. Forewings sub-hyaline, ochreous with darker greyish-brown markings, costal margin near base narrowly greyish-brown. Hindwings hyaline, grey with traces of greyish markings at base, costal veins narrowly and ciliae ochreous. Expanse 62 mm.

♀ Antennae yellow, short, pectinations short, ½; head and thorax fawn, basal half of abdomen pale ochreous, with a tinge of salmon-pink, apex pale fawn. Forewings subhyaline, pale grey, with faint darker grey spots surrounded by obscure pale ochreous. Hindwings hyaline, greyish-fawn, veins ochreous. Expanse 79 mm.

Loc. Tasmania: Ulverstone. Victoria: Moe 3, 4; Croydon 5, 6; Beaconsfield 3; Trafalgar 3; Yarragon 2. New South Wales: Austinmer 4. 54 males, 17 females.

The type, a male, has been figured; it is from "Van Diemen's Land", and is one of three presented to the British Museum by S. Walcott. The same three examples were apparently re-described, on p. 1575 of Walker's "List", as *Oxycanus subcarius*. The pair described above (fig. 115-116) are well-marked, many examples are smaller, somewhat darker, and almost devoid of markings (fig. 111, 116). The species is sometimes abundant in Eastern Victoria. Mr. C. G. L. Gooding has taken long series. In 1929 he wrote: "I managed to secure ninety examples of this Hepialid, and they are consistent with the fifty-four I am sending you". The tegmen of the male has a large anteriorly directed process, and the suspensorial process is only moderately developed and relatively straight.

OXYCANUS LAMNUS sp. nov.

Fig. 49, 119-120.

♂ Antennae reddish-ochreous, short, pectinations 1-1¼; head and thorax dark brown; abdomen, at base reddish-ochreous, at apex fawn. Forewings dull greyish-brown with slightly darker markings, surrounded by dusky ochreous suffusions. Hindwings subhyaline, pale grey, at veins obscurely reddish-ochreous. Expanse 60 mm.

♀ Antennae ochreous, short, with pectinations almost obsolete; head and thorax greyish-fawn, abdomen yellowish-fawn, becoming fawn at apex. Forewings subhyaline, greyish, with obscure dusky yellow areas surrounding grey spots and forming a series from costa at three-fourths to near hind margin at one-

half; traces of other marks near base. Hindwings pale grey, base narrowly clothed with yellowish-fawn hair. Expanse 76 mm.

Loc. New South Wales: Manly 5, 6 (May 31, 1907; type, a male, and allotype female, May 30, 1907, I. 18881 in S. Aust. Mus.); Clifton 4. 5 males, 4 females.

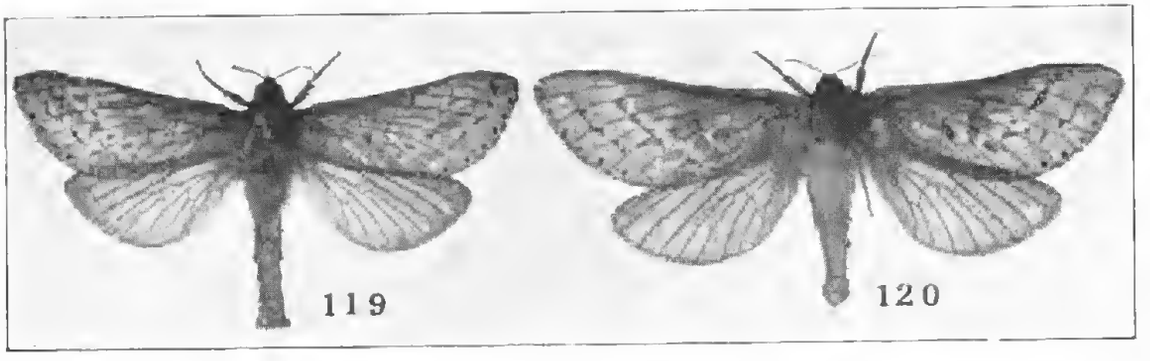


Fig. 119–120. *Oxycanus lamarus* sp. nov. 119, type, a male, Manly; 120, allotype female, Manly.

This species is closely related to the proceeding one, of which it may eventually prove to be the northern race. The genitalia of the male differ from *O. subcarius* in having the marginal process of tegumen much larger and the suspensorial spines produced and curved. The hind margin of the eighth sternite is evenly concave, whereas in the former species it is convex at the sides, with a slight median concavity. The wings differ in their greater opaqueness, and in the relative positions of the vague markings of forewings.

OXYCANUS SPHRAGIDIAS (Meyrick).

Fig. 50, 121.

Porina sphragidias Meyrick. Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1123.

♂ Antennae reddish-ochreous, pectinations obsolete, head and thorax above brown, beneath orange-brown, abdomen grey, at apex ochreous. Forewings chocolate-brown with ochreous markings, a black irregular mark near hind margin at base, and a broad white fascia from near base to termen. Hindwings pale chocolate-brown, base grey. Wings beneath dull chocolate-brown, with costal margins and an irregular terminal area orange. Expanse 53 mm.

Loc. Tasmania: Maitland; Launceston; Ulverstone. 15 males.

The male example figured is from Launceston. Some examples lack the white fascia of forewings, and are much darker in the forewings. The species is a rare one, and nothing is known of the life history. It is not close to any other

species of the genus, and further study may show that subgeneric separation is warranted. The long straight margin of the tegumen of the male genitalia, with its anteriorly projecting process, is distinctive.

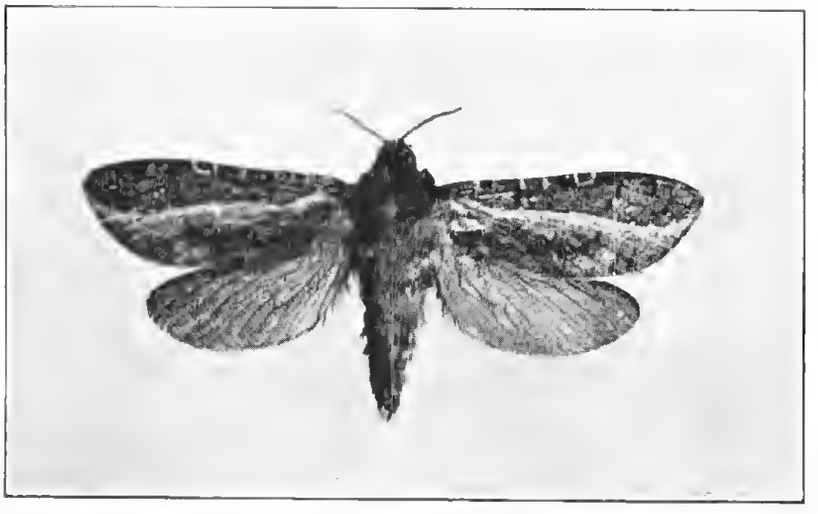


Fig. 121. *Oxycanus sphragidias* (Meyrick), male, Launceston.

An aberrant specimen of what appears to be this species has been taken by D. C. Pearse, on Mount Wellington (May 25, 1934). It has the forewing bright reddish-ochreous; there is no white fascia. A somewhat similar example is under examination from Launceston; in this the forewings are bright reddish-brown.

OXYCANUS DETERMINATUS (Walker).

Fig. 51, 122-125.

Elhamma determinata Walker, List Lep. Ins. Brit. Mus., vii, 1856, p. 1563.
Porina determinata Meyrick, Proc. Linn. Soc. N.S. Wales, iv (2), 1889, p. 1122.

♂ Antennae short, reddish-ochreous, pectinations short, 1½-2; palpi brown, smooth-haired, long; third segment three times as long as wide; head and thorax dull brown, abdomen pale reddish-ochreous, apex slightly darker. Forewings sub-hyaline, dull brown, with sparse silvery-white scales forming a median and a subterminal series of markings: a well-defined brown marginal white spot at r-m vein; costa with a subapical bright reddish-ochreous suffusion. Hindwings hyaline, pale greyish-brown, costal margin suffused with reddish-ochreous; base clothed with pale reddish-ochreous hairs. Expanse 66 mm.

♀ Antennae reddish-ochreous, short, obsoletely bi-pectinate; palpi long, terminal segment long, swollen at apex, smooth-haired; head and thorax dull fawn;

abdomen pale fawn, at apex slightly darker. Forewings hyaline, grey, traces of a white spot at r-m vein, and another slightly nearer to base. Hindwings grey, with base sparsely clothed with pale fawn-coloured down. Expanse 80 mm.

Loc. Western Australia: Swan River; Perth 5, 7, 11 (July, 1908, C. French, allotype female, I. 18886 in S. Aust. Mus.). 6 males, 1 female.

The type, a male in the British Museum Collection, has been figured (fig. 123). Some male examples (fig. 125) have a large series of dull greyish-white markings on the forewings, these are absent or obscured in the typical form.

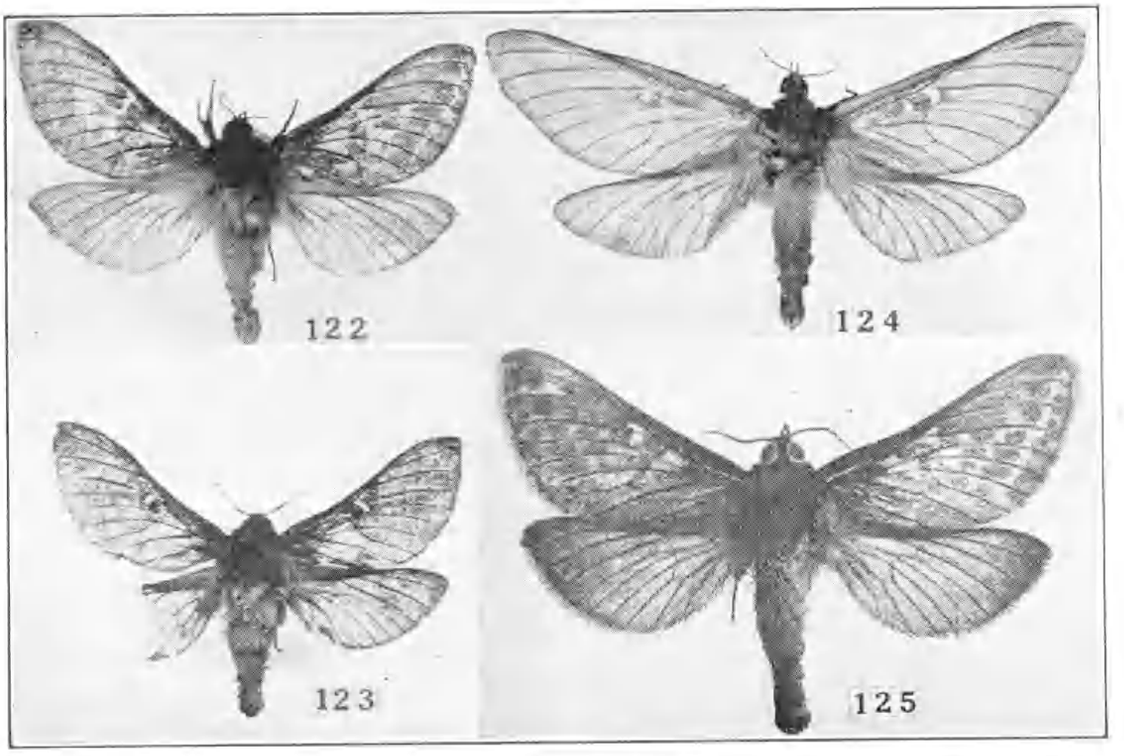


Fig. 122–125. *Oxycanus determinatus* (Walker). 122, a male, Swan River; 123, type, a male, Swan River; 124, allotype female, Perth; 125, male, Perth.

Walker, in his description, makes special reference to the unusually prominent palpi, thus leaving little doubt as to the identity of his species. The wide divergence between the emergence dates of the three specimens bearing such data is worthy of special note, for in most of the species of *Oxycanus* hitherto examined, the time of emergence seems to be limited to a relatively brief period during each year. The anomaly will doubtless be elucidated when more material is available, and it may then be discovered that there are allied species or forms included under the present name.

OXYCANUS BYRSUS (Pfitzner).

Fig. 126.

Abantiades byrsa Pfitzner, in Pfitzner and Gaede, Seitz Macrolepidoptera, x, 1933, p. 834, pl. 75e.

♂ Antennae with pectinations short. Forewing with costal margin slightly concave at one-third, apex acute, with well-rounded termen and inner margin, dark brown, with brown and dull greyish-white markings. Hindwings ochreous, tinged with pink near base. Expanse 134 mm.

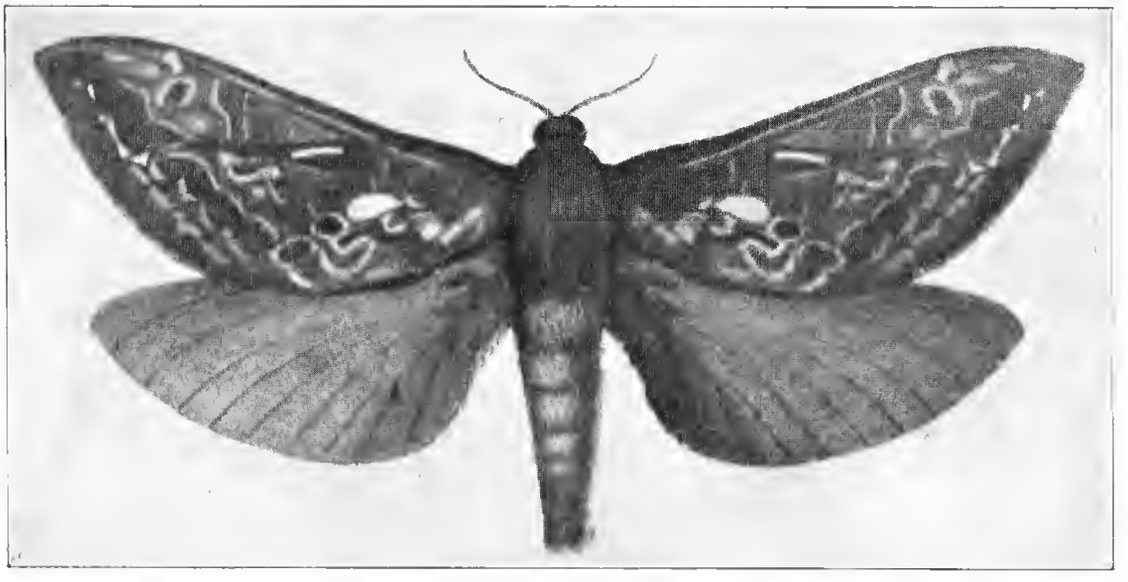


Fig. 126. *Oxycanus byrsus* (Pfitzner), male, New South Wales (after Seitz).

Loc. New South Wales.

O. maculosus and this are the only species that have not been examined during the progress of this revision. The venation of the figure given by Pfitzner seems to indicate that its position is in this genus rather than in *Abantiades*.

OXYCANUS MACULOSUS (Felder).

Fig. 127.

Pielus maculosus Felder, Reise Novara, ii, 1868, pl. 81, f. 1.

♂ Description not available.

Loc. New South Wales: Clarence River (type, a male, unique, in Tring Museum Collection).

This species appears to be close to *O. australis,* but a consideration of the limited climatic range of most Australian Hepialids and the absence of any other

records of *O. australis* in New South Wales, together with differences apparent in the photograph of the type, leads to the conclusion that *O. maculosus* is a distinct species. The Clarence River is an area of rain forest or "brush", and therefore differs considerably from Tasmania and Southern Australia. Through the courtesy of the authorities of Tring Museum, the type has been figured; it lacks the antennae. From the rather poorly-coloured illustration in "Reise Novara", it

Fig. 127. *Oxycanus maculosus* (Felder), type, a male, Clarence River (in Tring Museum Collection).

may be judged that the forewings are reddish-ochreous, the hindwings pale reddish-ochreous, with the apex and termen broadly darker and the base bright reddish-ochreous, as is also the abdomen. The antennae in the illustration are only moderately long, and with the pectinations about 2-3.

It may also be compared with *O. ballux*, from which it differs in the forewing markings, and in the colour of the hindwings.

OXYCANUS AEDESIMUS (Turner).

Fig. 128-129.

Porina aedesima Turner, Trans. Roy. Soc. S. Aust., liii, 1929, p. 307.

♂ Antennae whitish-ochreous, feebly bidentate, denticular elevations clothed with dense hair. Head dark brownish-black; palpi black, the terminal segment smooth-haired; thorax dark brown, abdomen somewhat lighter. Forewings rounded, ample, greyish-brown, with three paler transverse bands embracing series of black spots and lines, first from one-half costa to one-half hind margin, second from two-thirds costa to two-thirds hind-margin, and third from near apex to hind-margin. One or more of the black spots bear a fawn-coloured centre.

Hindwings dull ochreous-brown, the base yellow; ciliae greyish-brown. Expanse 55 mm.

Loc. Queensland: Eungella 10 (type in Turner Collection). 2 males.

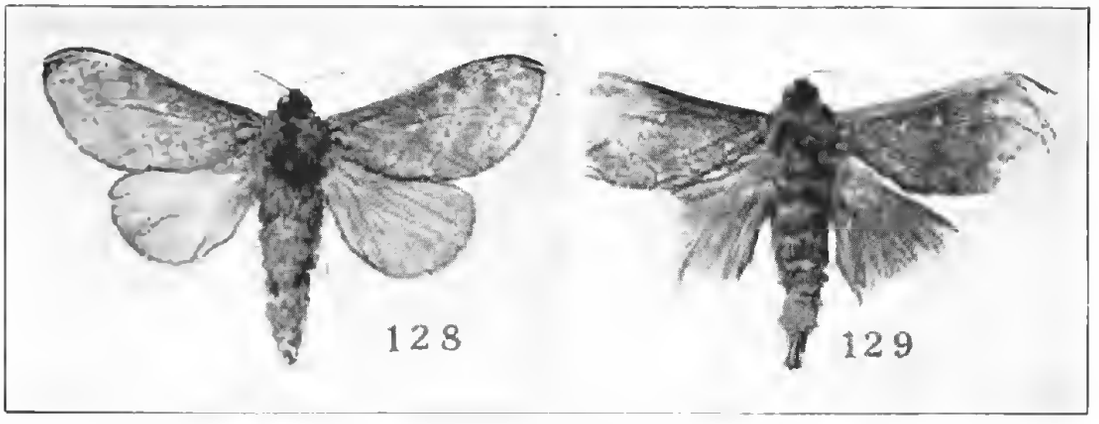


Fig. 128–129. *Oxycanus acutissimus* (Turner). 128, type, a male, Eungella; 129, male, Eungella.

This is a distinctive species, apparently not closely allied to any other. Through the kindness of Dr. A. J. Turner I have been able to examine the type, and also a second, much battered and larger male specimen taken at the same time. Unfortunately the genitalia could not be examined. The rounded, short, and ample wings and slender antennae distinguish this species from *O. silvanus*, which has similar markings on the forewings.

NOTE ON THE BODY TEMPERATURE OF A HEPIALID MOTH (*Trictena*).

In June, 1935, a freshly-emerged male of *Trictena argentata* was found resting beside a path at Adelaide. It escaped from the hand, and before re-capture was chased by several sparrows, from which it was rescued with difficulty. It was noticeably warm to the touch when held in the hand, and when liberated in a half-dark room it flew rapidly about, finally landing beside a window. The warmth of its body was again casually noted. Having placed it in a cyanide jar, a doubt was raised as to the possible significance of the warmth, and the moth was at once removed. Tests were made with a special thermometer, such as is used in studying human skin surface temperatures. At 2.30 p.m., shortly after it had been retrieved from jar, the moth had a body temperature of 21° Centigrade (room temperature 16·3° Centigrade). After 13 minutes this had dropped to 19°, but as it recovered from the effects of the cyanide gas it began to vibrate its

wings slightly, and its temperature rose again quite regularly from 19·3° at 2.49 p.m. to 21·0° at 3·07 p.m., and to a rather stable condition at 24·0° at 3.48 p.m. (room temperature 16·5°). At 3.55 p.m. it flapped its wings violently for half a minute, and then continued to vibrate them; the temperature rose again to a maximum of 26·5° at 4.45 p.m. when the room temperature was 16·0°. The temperature of the moth at the conclusion of the observation was 25·0°, and the room temperature 17·2°. It is of interest to note, therefore, that the body temperature of a *Trictena* moth may be more than 10° Centigrade above that of its surroundings, and in active flight may reach still higher.